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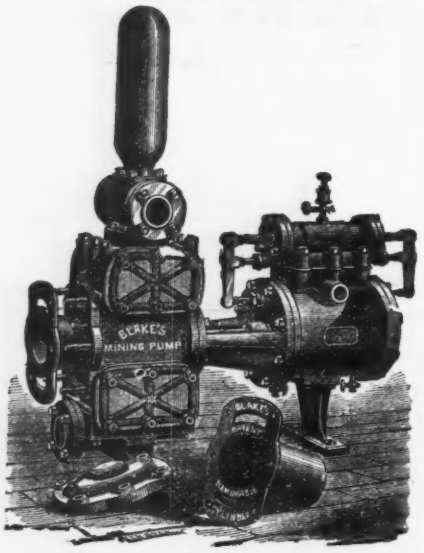

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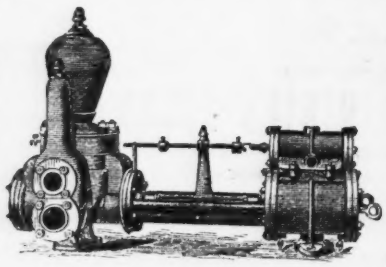

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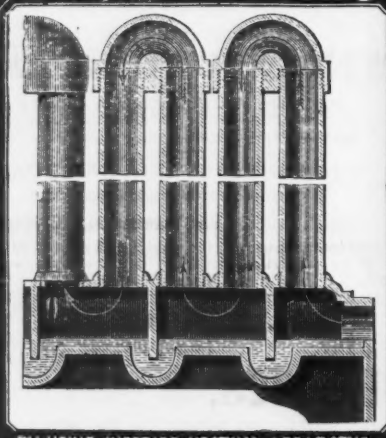

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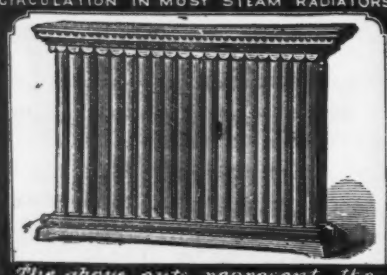

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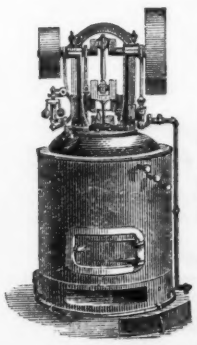

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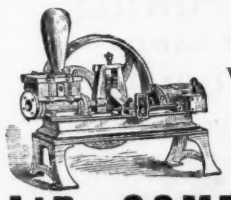

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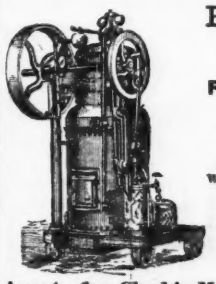

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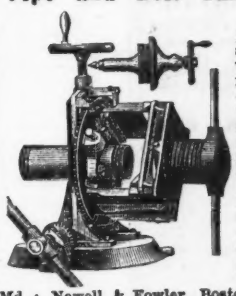

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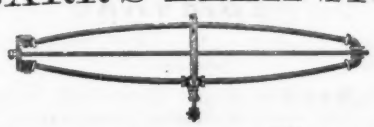

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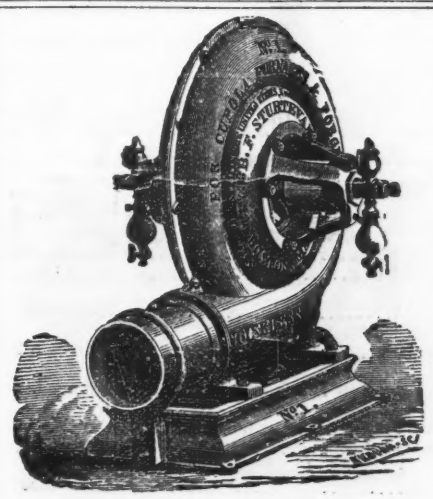

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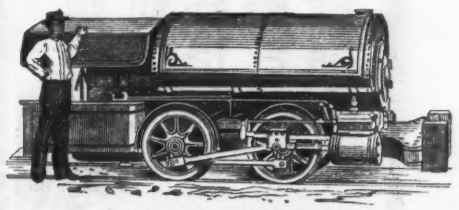

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THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W. RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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The Largest Make of Pig Iron on Record.

THERE is that Pittsburgh Isabella Furnace No. 2, 75x20, that has gone and increased its make of pig iron again, this time to 770 660-2240 tons a week (133 tons foundry, 601 tons gray forge, and 36 tons mottled). There seems to be no end to this thing, and it is getting as monotonous as an iron market report. Can't Mr. CROWTHER give us the "law of increase," whether it is in an arithmetrical or geometrical progression, and by putting it in the form of a simple formula in which the product is a function of the time, we could calculate just when Isabella No. 2 will be making 800, 900, or 1000 tons a week. This noting in every second number "the largest make on record," is getting tiresome.

The Miners' Union Colonization Scheme.

IN his address before the Miners' National Association, President SINEY stated that a scheme for a co-operative colliery was then receiving their attention, and he strongly endorsed it. From notices of it that have since appeared in the *Workingman*, it would seem that the colliery part of the plan is a long way in the future. The project is simply, at present, a colonization one. A large tract of coal lands in Kentucky is offered by the owner to miners, in areas to suit, provided a sufficient number can be induced to purchase. The miners are then to devote themselves to farming these lands, till such time as a railroad to the district is built, when it is supposed there will be a market for the coal. These several small owners are then expected to unite themselves in a co-operative colliery and get the capital for working it—where?

To quote from the *Workingman:*

"It is proposed to sell the farming lands to settlers on easy terms, and on them they will be expected to live until the railroad comes along, when, each settler being entitled to a share in the coal proportionate to the quantity of land he has purchased, mines can be opened on the joint stock, industrial partnership, or purely co-operative plan. For a year or two there will be hard work and little pay, as we have already said, for all who go to these lands, but in that interval they can easily establish comfortable homes for themselves, and when, at its expiration, any of the many railroads projected through the Cumberland Gap are completed, there will be found a close market for the coal, the deposits of which, on these lands, are estimated at over one thousand millions of tons.

"No price will be fixed upon the lands until the owner has determined that at least a hundred or two are willing to buy. When that many come together and give evidence that they mean business, he will consult with them, pay the expense of any one or two men whom they may select to go there and examine the lands, and will agree upon such terms as, we are convinced, will be more than satisfactory. The price, per acre, will be low; the payments will be by small instalments; those who go first will be entitled to, and will get, the best terms; *all* will be assured to an equitable share in the coal; no monopoly, or exclusiveness of any kind, will be aided or permitted."

This is an exceedingly crude and unbusiness-like project, and, in its present shape, will scarcely be received with much favor. It is not clear where the National Association enters into it, except that the project is favored by its officers. Does the Association buy the land and then sell it to the miners, or does it guarantee the payments by the purchasers?

How long will these farmers—for they must follow farming, exclusively, for an indefinite number of years—continue their membership and pay their dues to the Miners' Association? What binds them to unite or co-operate in opening mines when that "projected railroad" is built? Does the Association agree to furnish the working capital for the collieries to be opened then; and, if not, where is the money to come from?

What is to be the price per acre of these lands, and what commissions are officers to receive from the owner of the lands for effecting the sale? What is the miner to gain, anyway, by going into the scheme, more than he would gain by buying land, as he can, outside of the Association? A number of such questions will, naturally, suggest themselves.

The object is, doubtless, to relieve the labor market at the mines of a surplus of hands, and thus keep up wages; but, as the over-supply of labor is due to the fact that wages are now kept up higher than in any other branch of industry, we cannot see how the exportation of a few hundred men can much benefit its cause. We have no doubt that, eventually, those who can buy coal lands will be much better off than those who remain at the mines, even though they receive high wages, but it is not clear how the plan can be called a co-operative one, or in what way the National Association is connected with it. Indeed, to the uninitiated, it looks more like a plan by which some one can secure "commissions," than one organized for the good of the workingmen.

The Effect of the Duty on Copper.

As a relief to the monotony of waiting for that improvement in the iron trade which it has been telling us weekly, for the past year, "may come when least expected," our enterprising, but too sanguine, contemporary, the Pittsburgh *American Manufacturer*, has been indulging in the exhilarating pastime of finding "mares' nests." Our editorial on the Effect of the Duty on Copper, of November 20th, appears to have so disconcerted him, that he rushes into statistical figures with the most astounding disregard for consequences. In view of the curious complication of blunders he makes, his readers may well join in the "regret" that his ample pages did not afford the space to publish even a fair abstract of our article. Had he reproduced it, we would not now have to protest against his attributing to us statements we never made; for example, when he quotes us as saying "our consumers have to pay just the duty, 5 cents per pound, more than they would pay were there no duty;" and, again, "that the tariff is a bad thing anyhow." In no part of our article did we make these assertions or their equivalents; on the contrary, we said that "were it not for a combination which is able to control about three-quarters of all the copper produced, the price would be reduced, *notwithstanding the tariff.*" We suspect the nature of the facts we gave, rather than the regretted want of space, excluded them from our contemporary's columns.

We shall not commit the same offense, but quote as follows from the *American Manufacturer:*

"The ENGINEERING AND MINING JOURNAL lends its influence to the attack that is now being made on the duty on copper, and in doing so allows itself to fall into errors that certainly do it no credit. We regret that we have not the space to publish its article, but we will endeavor to represent it fairly.

"The chief points made are: *First*, that by reason of the duty of 5 cents gold per lb. on copper, the price to American consumers is 4 cents or 5 cents per lb. above what we sell our copper to foreigners.

"*Secondly*, that our consumers of copper have to pay just the duty, 5 cents gold, more than they would pay were there no duty.

"*Thirdly*, that our production of copper is largely in excess of our consumption, and

"*Generally*, that the tariff is a bad thing, anyhow.

"As to the quantity exported and the price, the ENGINEERING AND MINING JOURNAL says:

'Our exports of ingot copper alone now exceed 10,000,000 lb. a year, and in cartridges and other forms of manufactured copper, we are sending out, probably, at least 3,000,000 lb. more.'

"The Commerce and Navigation Reports for the fiscal year ending June 30, 1875, show that the amount exported of American copper for the previous year in the form of pig, ingot, etc., was 5,123,470 lb., not including cartridges, fuses, and other manufactured copper, and for the previous year, 1874, only 503,160 lb. This is far below 10,000,000 lb.

"As to the price at which the copper for export has been sold. The article claims that it is sold in England at '19 cents, less freight,' and confuses gold and currency values, so that the uninitiated cannot tell which is which. The Commerce and Navigation report shows that the export value of the 5,123,470 lb. exported was $1,042,536, or about 20⅓ cents in New York or the port of shipment. The actual price has been 21⅛ to 22¼ cents currency. This is not 19 cents in England, less freight, even if the 19 cents is gold.

"The third point, that the production of American mines is a very much larger quantity than is consumed in this country.

"Of the 40,000,000 lb. of copper produced in this country over 5,000,000 pounds comes from foreign ores. The exports for the year ending June 30, 1875, were 5,123,470 lb., which would equal the amount made from foreign ores, leaving something over 34,000,000 lb. for home consumption. Our actual consumption is about 33,000,000 lb.

"The above are the facts in the case, as can be abundantly proven. It is for the ENGINEERING AND MINING JOURNAL to decide whether its "facts" can be proven too. If not, then its argument is baseless and of no value. We do not expect to convince it that protection is the best thing for the country, but we ask it to use facts that are facts in its arguments against protection."

We summarize our critic's statements as follows:

1. That we exported only 5,123,470 lb. of copper instead of over 10,000,000 lb., as we stated.

2. That the price of copper sold for exportation, last year, was 20⅓ cents in New York.

3. That the price of copper sold for home consumption was 21⅛ to 22¼ cents currency.

4. That over 5,000,000 lb. of our copper was made from foreign ores.

5. That our consumption last year was about 33,000,000 lb.

6. That "the above are the facts in the case, as can be abundantly proven."

It would have been difficult to get more errors in an equal space than are condensed in the above paragraphs.

We will answer in order, as follows:

1st. We long ago found that the Commerce and Navigation reports of our exports of copper for the past fiscal year were totally incorrect, and we communicated the information in our possession to the Bureau of Statistics in Washington, where our correction was gracefully and thankfully admitted. The following letter from R. K SANFORD, Esq., of the New York Export Department of the Customs, fully vindicates and confirms our figures, and annihilates the arguments our contemporary has based upon its erroneous data. The actual ex-

ports of ingot copper alone, from the port of New York, the last fiscal year, were 10,166,169 lb., (or more than 10,000,000 lb. as we stated) valued at $2,038,405.

CUSTOM HOUSE, NEW YORK CITY,
COLLECTOR'S OFFICE, Dec. 3d, 1875.

SIR: In answer to yours, of the 1st inst., I gladly transmit the results of our recent investigations, in relation to the export of ingot copper. Your letter of inquiry was manifestly prompted by a knowledge of the fact that we had just prepared, for the Bureau of Statistics at Washington, a carefully corrected and detailed statement of the exports of copper for the year ending June 30th, 1875. In that statement, the aggregate of ingot copper exported from this port during said year, is stated at 10,166,169 lb.—$2,038,405. In this connection I cannot refrain from expressing our great obligation to you for directing our attention to the probable inaccuracy of our published statistics of that branch of trade, and furnishing the key which led to the discovery that large quantities of ingot copper had been shipped, which were either erroneously cleared or not cleared at all; and I beg also to express my admiration for your energy and tact and accuracy as statisticians. Truly yours,

R. K. SANDFORD.

In charge of Department of Export Statistics, N. Y. Custom House.

2d. The *American Manufacturer* credits us with saying the price of copper for export was "19 cents, less freight," whereas the statement was made by, and credited to, the Boston *Advertiser*, and we distinctly said that these statements "are not strictly accurate;" but, even if we had not so expressed ourselves, we decline to be held responsible for or endorse the statements we credit to other sources, as we decline to endorse the erratic assertions quoted above from the *Manufacturer* itself.

The average price at which copper for export was valued, as given in the corrected Government returns quoted above, was 19.9 cents currency per lb., and not 20¼ cents, as stated by our contemporary.

3d. The average price at which copper for home consumption was sold in this city throughout the year 1874, was as nearly as possible 23¼ cents per lb. (not 21⅛ to 22½)) or 3.35 cents per lb. more than was obtained for the same quality of copper sold for export. In many cases this difference has exceeded 4 cents. Our figures are based on the annual reports of Messrs. HEINE BROS. and EDWD. A. CASWELL, Esq., of this city.

4th. The Government returns of imports are usually much more correct than those of exports, but in the case of copper ore we believe these are also in error. We have not at present the full data on the subject, but we hope to have them in a few weeks. There is very little copper ore imported into this country; scarcely more than a few sample lots, and a small amount that comes from Canada.

The official reports state that, during the past fiscal year, we imported 46,231 cwt., or say 5,177,872 lb. of copper ore. Our sapient critic has discovered that this yielded "over 5,000,000 lb." of metallic copper, consequently foreign ore must contain about 100 per cent. of metal! This discovery is interesting, and puts in the shade that much ridiculed 90 per cent. iron ore discovered somewhere out near Pittsburgh, we believe, a year or two ago. We greatly doubt that anything like 5,000,000 lb. of copper ore was imported last year, but if it were, it certainly would not have yielded 1,000,000, not to say "over 5,000,000 lb." of copper.

5th. As our production was, say, 40,000,000 lb. last year, and as we exported in ingots over 10,000,000 lb. from this port alone, and in other forms say 3,000,000, the "home consumption" must have been about 27,000,000, not 33,000,000 lb. as asserted by our contemporary.

Our exports of copper ore, probably, at least equal our imports; indeed, according to the Government returns they exceed them; but we have reason to believe these returns to be incorrect.

6th. Finally, the Pittsburgh sage says his statements above given "are the facts in the case," and with these "facts" champions protection, while not one of his statements is correct, and most of them are egregiously wrong. The most of these blunders follow naturally from the first mistake of taking our exports at half their actual amount.

Let our contemporary temper his zeal for protection with a little knowledge when he avocates the cause in the form of criticism; and let us suggest, also, that the true interests of protection are better served by the advocacy of such measures as will aid and encourage home manufacture, than by Quixotic assaults on every reference to the abuses that grow out of this, as they do out of every, system of public subsidies.

As is well known, the ENGINEERING AND MINING JOURNAL is not an advocate either of free trade or protection. Our cause is that of improvement in mining, metallurgy, and the kindred arts, and the general encouragement of industry on a solid and permanent basis, and it was in the interests of home manufacture that we called attention to the copper tariff. We are also of the opinion that honest protectionists should be the first to reform the abuses of tariff legislation, otherwise they give strength to the opponents of their policy, and reform in the hands of these would probably not stop at the gross abuses of the system, but would, at the same time, sweep off all protection from those industries that actually need it in a greater or less degree.

Distance Measurer.—Lieut. UNGE, of the Swedish service, has invented a new apparatus for the measurement of distance. Its exterior aspect resembles that of a watch. The system rests upon the rate of the transmission of sound through the atmosphere from the point whence it starts to the ear of the observer. The time between the flash and the report is the interval to be measured. When the instrument is made use of the pointer is placed at o (corresponding to the place of XII. on a watch dial). As soon as the light is seen the observer presses down a knob fitted on the outer rim, and turns his ear in the direction from which he expects the sound. When heard, the pressure on the knob is released, and the pointer, which has been at work during the detention of the knob, shows the distance on a dial divided into special peripheries according to the seasons.

NEW PUBLICATIONS.

REPORT *of an Expedition up the Yellowstone River, made in* 1875, *by* JAMES W. FORSYTH, *Lieutenant-Colonel and Military Secretary, and* F. D. GRANT, *Lieutenant-Colonel and Aide-de-Camp, under the orders of Lieutenant-General* P. H. SHERIDAN, *Commanding Military Division of the Missouri.* Washington, 1875.

THE expedition of which these reports give an account had for its chief object a reconnoisance of the navigable portion of the Yellowstone, with reference to travel upon it by steamboats, (opening a new route to Montana) and to the possible establishment of military posts. In these respects the report of Col. FORSYTH, though scarcely more than an itinerary, is valuable. It is accompanied with sketches of the mouths of the tributaries passed and a sketch-map of the Yellowstone itself, for 485 miles above its mouth, or 250 miles above the mouth of the Powder river. But Col. FORSYTH thinks that the mouth of Big Horn river, 165 miles above Powder river, or 400 miles above the mouth of the Yellowstone, would prove practically the head of navigation. As for the report of Col. GRANT, appended to that of the commander of the expedition, it has apparently been published without the revision of the author or anybody else; but there is so little in it that the most judicious course would have been to withhold it from publication. As it is, the types and the Colonel together have made a bad mess of it; and, while it scarcely challenges the savage criticism which it has received from the political press, it is certainly, in its present form, an amusing piece of composition. Some of Col. GRANT'S observations are shrewd and practical, though expressed in a manner denoting an unaccustomed pen. His generalizations, particularly on scientific points, have all the audacity of youth. With regard to the main point—the feasibility of a route into Montana by the Yellowstone, he says:

"The water of the Yellowstone is deeper than that of the Missouri above the Yellowstone, and could be navigated more months in the year than the Missouri can be. The distance from its mouth to the head of navigation is about one-half the distance from the mouth of the Yellowstone to Fort Benton, and the distance from Pompey's Pillar to the settled part of Montana is about the same as it is from Fort Benton, and I believe a good wagon-road all the way could be had by following the Yellowstone up to Crow Agency, and then going across to the Gallatin Valley."

Whether the head of navigation, by this route, would be as near for Helena, Deer Lodge, Phillipsburg etc., as is Fort Benton, we must still doubt; and the first two of these are the leading cities of Montana. But for the Eastern part of the Territory, a route up the Yellowstone might be a great advantage; and, if reasonably safe from Indians, it would afford a very pleasant way of getting into the famous National Park. If we wished to visit the Geysers at present, we should go by rail to Ogden, and thence to Taylor's, on the Snake river, thence riding up the Snake to Henry's Lake, and so through to the Madison Basin. *

Lake Superior Copper Mines.

THE output of mineral for the year ending with the close of navigation, from the copper mines, shows a considerable increase over last year. Lake Superior is indebted mainly for its enlarged yield to the Calumet and Hecla, Franklin-Pewabic, Osceola, Allouez, Atlantic, Cliff and Phœnix. All of these mines, the coming year, are good for as much, if not more, mineral, than they afforded the past twelve months.

THE CALUMET AND HECLA was never in so good a condition for making large returns as it is to-day. The openings on the deposits here are characterized by a reliability in mineral production that is amazing, and places the conglomerate in this mine, as an even yielder, ahead of any lode or vein worked in the Old or New World.

THE FRANKLIN affairs are assuming a better shape every day. The openings underground during the time the mine was tributed, were neglected. It takes time to prepare the lode for the stamps. Shafts and levels are necessary to this end. These are being provided with all economical dispatch. The mill belonging to this company has been fitted up during the past season, and is now doing good service. The mine will turn out a handsome amount of copper the coming year.

THE OSCEOLA COMPANY has now arrived at a point where it is enabled to judge pretty accurately what the mine is capable of doing for a while yet. If the conglomerate going south—so far it is impoverished—makes copper on the location, and the fact is established, the Osceola stockholders will have reason for rejoicing. The precautions taken during the past season by the management prevent further trouble or annoyance at the stamp mill used by the company on account of water.

THE ALLOUEZ, for several months, has been affording an amount of mineral which has put heart in its owners, and warrants them in predicting that the mine is all right. The pleasing features underground are centered on copper-bearing lode going south, which is quite rich. There is talk of increasing the crushing capacity of the stamp mill of the mine. If this is done, and rock is furnished for the heads, the Allouez in 1876 will make a good record.

THE ATLANTIC, notwithstanding the drawbacks which it had to encounter the past year, on account of an incomplete surface plant, the product of material from the mine was greater than the year before. The mine is now in better shape for economical working than it ever has been. Taking the improved condition of the surface working plant into consideration, together with the outlook underground, we have every reason to expect the coming year an excellent report from the Atlantic.

THE QUINCY, during the past year, has had to contend with an impoverished streak of ground in its lower workings, which is characteristic of the Pewabic deposit. Interruptions such as this are not a new thing in this and other mines working on the same lode. The managers are pushing cross-cuts and other searchers after the "pay ground" in this part of the mine, with every reason to expect success. The yield of the Quincy for the past year, notwithstanding its set back in this direction, will not vary much from the year before.

All the large producing mines on Keweenaw Point, which embrace the Central, Phœnix, Cliff, and Copper Falls, have all done well the past year, except the latter, which has had to fight against one of the poor runs of ground which has made the Copper Falls noted as a "pockety" mine, so far as its developments on its fissure veins are concerned. The company is mining on its "ash bed," and carrying forward a line of opening on the fissure vein, which are liable to expose one of the rich shoots of copper which have heretofore set that mine on its feet after a season of depression.—*Mining Gazette.*

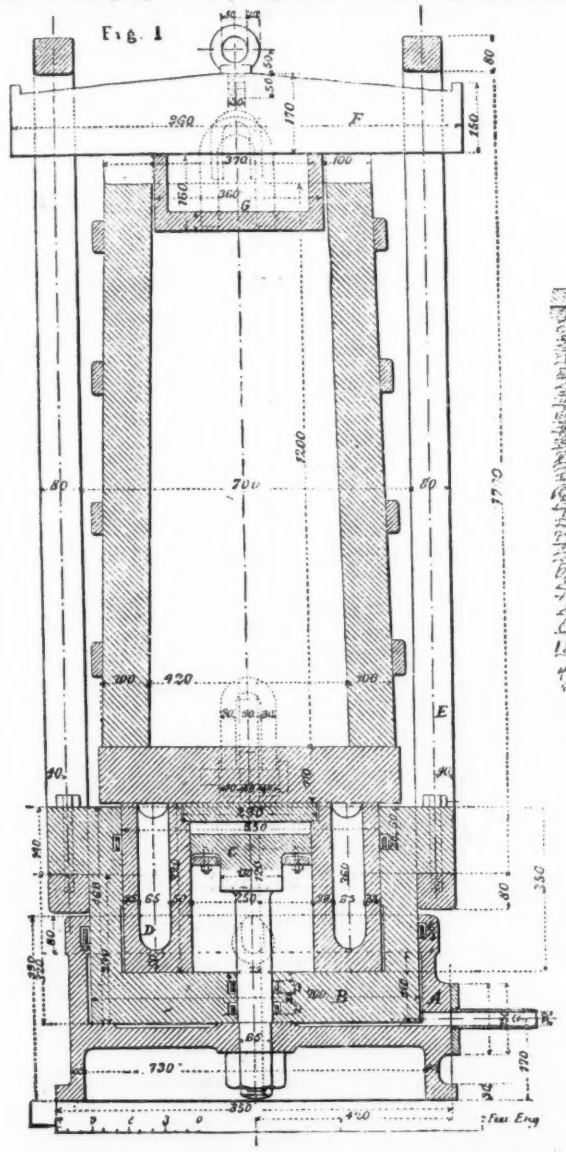
Compressed Steel.

IN the course of a recent article on this subject we mentioned incidentally a mode of compressing steel, introduced by Mr. R. N. DAELEN, of Barop, according to which the compression was effected by pumping fluid steel into a closed ingot mould. Since then Mr. DAELEN has, in some letters addressed to *Stummer's Ingenieur*, given details of his plans, and the latter appear to us of such interest that we propose to lay some particulars of them before our readers.

Mr. DAELEN holds the opinion—which is undoubtedly correct—that steel, to be compressed effectively while in the fluid state, should be dealt with as promptly as possible after pouring, so as to avoid the formation at the sides or top of the ingot of a crust which will afford additional resistance to the compressing piston. It is, in fact, reasonable to suppose that if dealt with at a sufficiently high temperature to insure perfect fluidity, a much less pressure would be necessary to give the desired solidity to the ingots, than would be requisite if the compression was delayed until even a slight cooling had taken place.

Under these circumstanes it suggested itself to Mr. DAELEN that it would be desirable to save the time required—in arrangements previously proposed for compressing steel—to transfer the ingot to the hydraulic press after pouring, and for this purpose the arrangement shown by Fig. 1, annexed, was construct-

Fig. 1



ed and tried. In this arrangement the ingot mould stands, as will be seen, on the press, the cylinder A of the latter being in direct communication with the hydraulic pressure available at all Bessemer steel works, and the plunger B being thus forced upwards by merely opening a water admission valve.

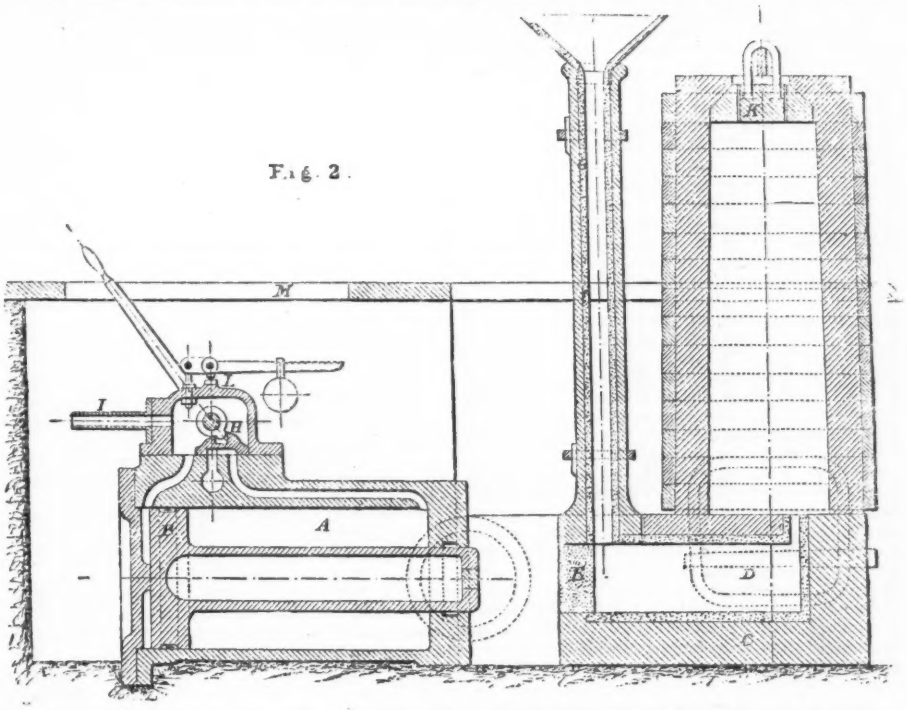
Referring to the section it will be seen that the plunger B is itself bored out to form the cylinder for an annular plunger D, while inside this plunger is a piston which, by means of a rod, is fixed to the bottom of the cylinder A. It thus follows that when the plunger B is raised by admitting water to the cylinder A, the water enclosed between C and B is subjected to a pressure which is greater than the pressure admitted to the cylinder A, in the ratio that the area of the plunger B is greater than that of the piston C, and this water under high pressure acts on the annular plunger D and forces up the ingot mould. In the mouth of the latter is placed a short plunger G, as shown, this plunger taking a bearing against the cross piece F which is tied down to the plunger B, by the side rods E E. It thus follows that as the ingot mould is lifted in the manner we have explained, the plunger G is brought to bear on the fluid steel and thus compresses the latter. To regulate the pressure a safety valve (not shown in our engraving), is provided, and the water supply pipe leading to the cylinder A is made of very small diameter.

In the arrangements we just described the plunger G and crossbar F had, of course, to be placed in position after the steel had been poured, and some time, herefore, was still lost before the pressure could be applied. To reduce this loss of time the plunger was provided with two trunnions to which the side links were connected, and was made in the form of a funnel, so that the steel could be poured through it. The funnel thus formed was protected by a fire-clay lining, and the small hole at the bottom was closed by a plug before the pressure was applied.

Mr. DAELEN states that with this arrangement—it being possible to apply the pressure directly after the filling of the mould—very good results were obtained with a comparatively low pressure, but the piston G acting on the whole sectional area of the ingot was soon arrested when a solid crust was formed and the interior of the ingots still showed some porous places. An experiment was then made of forcing a cylindrical plunger through the cover of a filled ingot mould, and this was so far successful in giving better results with a still lower pressure as to lead to the idea of substituting fluid steel for the plunger, and pumping such fluid steel into an ingot mould already filled. This is the principle on which Mr. R. N. DAELEN's patent for compressing steel is based, and we must now describe the manner in which the system is carried out.

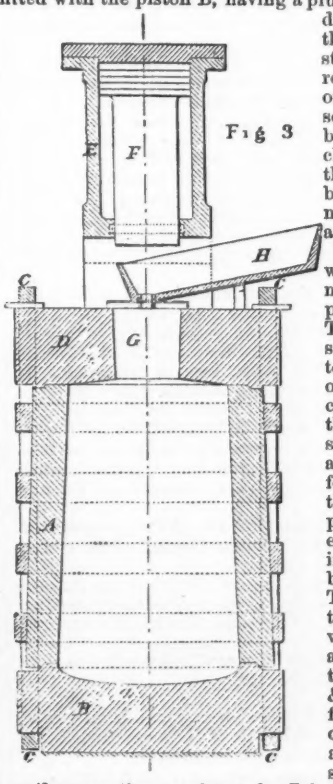
After several experiments with arrangements of various kinds, Mr. DAELEN found the apparatus illustrated in Fig. 2 to give the best results, when it was desired to produce small ingots of uniform weight, the compressing arrangements being, however, usually applied to a group of four ingot moulds instead

Fig. 2.



of to one only, as shown in our engraving. Referring to the latter, it will be seen that the arrangement consists of the horizontal hydraulic cylinder A, fitted with the piston B, having a plunger on its front side. Opposite the hydraulic cylinder is the base plate C to which the ingot mould is firmly secured by iron straps, this base having in it a hole D corresponding with the plunger on the piston of the hydraulic cylinder. As seen by the section, this hole D is protected internally by a fire-clay lining, while its mouth is closed by the fire-clay plug E. At one end the cylindrical hole D, of which we have been speaking, communicates with the runner G, while the other end is connected by a small hole with the ingot mould.

Fig 3



The ingot mould is strengthened by wrought-iron hoops, as shown, and its mouth is contracted and closed by the stopper K, which is pierced by small air holes The steel is poured through the runner G so as to enter the ingot mould from the bottom, and, when it is filled, the hole D is, of course, filled also. Things being in this condition, the slide-valve H is, by means of the hand lever, moved into the position shown in Fig. 2, and the water being thus admitted behind the piston B, the latter is forced forward, causing the plunger to enter the hole D. The first movement of the plunger, acting on the plug E, closes the entrance to the runner G, and the steel being then perfectly confined is compressed by the further movement of the plunger. The pressure is allowed to remain on until the steel has sufficiently cooled down, when the runner G and the ingot mould are detached from the base, the plunger of the hydraulic press withdrawn, the hole D, &c., relined, and the apparatus is then ready for another operation. The relative areas of the piston B and the plunger it carries are such that the ordinary hydraulic pressure available in Bessemer works suffices for the operation, a safety valve L being provided in cases where there is no ac-

cumulator. Different sized moulds can, of course, be placed upon the base C as desired.

Mr. DAELEN remarks that, if a group of four ingots weighs about 24 cwt., seven or eight groups or presses will be required in a Bessemer casting pit, the press cylinders being placed radially and under the foot-plate M. The space between the press cylinders and the ingot is filled with sand to protect the former from any accidentally spilt metal.

In cases where very large ingots have to be produced—particularly if crucible steel has to be dealt with—the arrangement last described would not be successful, as there would be a great probability of the metal setting to greater or less extent in the runner G, and thus causing a stoppage. Besides this, in the case of a very large ingot, the surface would be apt to become convex from cooling, if it was run from below through a single small opening. To meet such cases, Mr. DAELEN has designed the arrangement shown by Fig. 3. According to this plan, the mould A is placed upon the bed-plate B, this latter and the cover D being firmly connected by the tie rods C C. Above the cover D is placed the hydraulic cylinder E provided with a piston, having on its lower side a plunger F, equal, in diameter, to the hole G in the cover of the ingot mould. The mould is filled by the aid of the runner H, which is removed when the fluid steel has risen nearly to the level of the top of the cover, and the water is then admitted to the hydraulic cylinder, causing the plunger F to descend and forcing the steel contained in the hole G down into the ingot mould, and thus exercising the desired compression on the metal.

In comparing the plans of Mr. DAELEN, just explained, with those employed by Sir JOSEPH WHITWORTH, two leading differences at once suggest themselves; the first being that Mr. DAELEN provides for a much smaller amount of compression than Sir JOSEPH appears to find necessary; while the second is that Mr. DAELEN, in all cases, effects the compression in solid moulds, while Sir JOSEPH WHITWORTH employs moulds which are, from their construction, more or less porous over almost the whole of their surfaces. It would be interesting to know how far the first of these differences was consequent upon the second. We have, in our former article, expressed the opinion that a large proportion of the apparent compression—one-eighth of the length of the ingots—obtained by Sir JOSEPH WHITWORTH must be due to a change in the volume of the mould itself, and it is certain that the composite construction of Sir JOSEPH'S moulds would, to a certain extent, facilitate this enlargement of volume. The real amount of compression which an ingot undergoes can, as we have said, only be determined by a comparison of the specific gravities of the compressed and uncompressed steel, and this comparison Sir JOSEPH WHITWORTH has not, so far as we are aware, made public. As regards the relative advantages of solid and porous moulds, little can be said, as the matter is one which can only be settled by experience. Looking at the matter from a theoretical point of view we should be led to expect the best results from porous moulds; but, on the other hand, solid moulds have for some time been in regular use at Neuberg, and the ingots compressed in them have shown thorough solidity.

In the earlier part of this article we have referred to the desirability of insuring the utmost promptness in carrying out the compression of the steel immediately after pouring, and it is only fair that we should add that at Sir JOSEPH WHITWORTH'S works due importance is attached to this point, the ingots being cast in the pit belonging to the hydraulic press, and only having to be shifted a few feet horizontally on suitable lines to bring them under the action of the press. With Mr. DAELEN'S arrangements a promptness even greater than that at the Chorlton-street works may probably be secured, and in any case the plans which we have described in the present notice possess sufficient novelty and points of merit to render them well worthy of attention, and to lead us to hope that on a future occasion we may be able to say something concerning their performance in regular every-day practice.—*Engineering.*

Discovery of Vespertine Coal Beds in Huntingdon County, Pennsylvania.*

By CHAS. A. ASHBURNER, Assistant Second Geological Survey of Pennsylvania.

A discovery which the author made, in June last, of nineteen coal beds in the Vespertine No. X of Sideling Hill, in Huntington County, Pennsylvania, has induced him to present to the Society a descriptive section, with a *very brief* review of the formation, prior to its publication in the "Report of Progress of the Field-work of the Second Geological Survey of Pennsylvania in the Juniata District, for 1875," which will be printed during the ensuing winter.

The special district which I have been directed to study, with Mr. CHARLES E. BILLIN, topographer, extends from Blacklog Valley, formed of Trenton limestone No. 2, on the South-East, in a direction a little North of West across Jacks Mountain anticlinal to the Broad Top coal basin; embracing a complete section of the palæozoic strata, from No. 2 to the lower coals of the Broad Top basin, including the Clinton fossil ore beds, the brown hematites of the Oriskany and Hamilton, and the ores of IX, and XI, which, with the exception of the two latter, are mined by the Rockhill Iron and Coal Company, whose furnaces have just been erected at Orbisonia.

The White Catskill, or the Vespertine of ROGERS, encircles the Broad Top Mountain. To the East it forms Sideling Hill, the rocks of which dip, at the tunnel of the East Broad Top R.R. where the section is constructed, 58° toward the North-West and range about South 18° W. To the South of the plateau, the Vespertine forms Harbor Mountain, and to the West, Terrace Mountain. To the North-East, five miles below Huntingdon on the Juniata River, Sideling Hill and Terrace Mountain unite, enclosing the synclinal red shale basin of Plank Cabin Valley. In like manner, to the South, Sideling Hill joins Harbor Mountain in a broad synclinal summit, only to separate again into two synclinal mountains. The eastern one of these continues on into Maryland, while the broader and western mountain has its crest denuded, and encloses the narrow valley of Brush Creek.

The west-dipping strata of Harbor Mountain circle around the southern extremity of the red shale Valley, to unite with the east-dipping rocks of Terrace Mountain.

The data obtained in the tunnel, combined with those secured in a gap through Sideling Hill, four miles south-west of the tunnel, were sufficient to construct a section, and demonstrate the thickness of the Vespertine formation with great accuracy:

VERTICAL SECTION OF VESPERTINE OR UPPER WHITE CATSKILL ROCKS.

(A.) UMBRAL RED SHALE—No. IX.

ft.	in.	
460	0	—Alternating hard, massive grey and greenish-grey sandstone, with thinly-bedded and flaggy sandstone, and shale of the same color.
8	0	—Massive grey sandstone, surfaces coated with ferric oxide.
23	0	—Alternating massive grey and greenish sandstone, containing a twelve-inch seam of black slate, showing impressions of minute plants.
28	0	—Massive grey sandstone, containing a thin parting of coal.
0	5	—Grey argillaceous sand.
0	2	—Coal.
1	3	—Soft greenish-grey micaceous shale.
56	0	—Light-grey massive sandstone, containing thin plates of coal.
1	0	—Sandstone, containing thin partings of coal.
6	0	—Soft loose sandstone, containing seams of coal, running irregularly through the mass, and amounting, in all, to about 5 inches.
12	0	—Massive sandstone, containing, in its lower part, plates of coal.
0	2	—Poor, bony coal.
1	6	—Sandstone.
0	¼	—Argillaceous sand.
0	3	—Coal, with maximum thickness of 9 inches.
0	4	—Argillaceous sand, containing plates of coal.
15	0	—Grey sandstone, containing, between the strata, a great deal of loose sand.
26	0	—Grey sandstone, containing nodules of pyrites and plates of coal in the upper portion of the mass.
0	1	—Coal, very much broken up.
2	6	—Sandstone.
0	1	—Coal; of brilliant lustre, rhombohedral fracture, resembling bituminous coal.
0	6	—Sandy fireclay.
0	1	—Coal.
4	0	—Sandstone, with thin partings of coal in the lower portion.
9	0	—Sandstone.
0	1	—Clay.
34	0	—Shaly sandstone.
0	1	—Coal.
6	0	—Shaly sandstone.
0	3	—Poor bony coal.
6	0	—Shaly sandstone.
0	1	—Thin seam of coal, very much broken up, and associated with red sand.
4	0	—Shaly sandstone.
0	3	—Coal, with maximum thickness of 6 inches.
2	0	—Shaly sandstone.
0	1	—Coal.
1	0	—Shaly sandstone.
0	1	—Coal, with sandstone above and below it.
36	0	—Grey sandstone.
0	8	—Steel grey shale, of a greasy lustre.
0	1	—Coal.
0	1	—Clay (fireclay?)
5	0	—Sandstone.
0	1	—Coal.
0	10	—Sandstone.
0	2	—Coal, resembling very much specimens from Montgomery County, Va.
0	5	—Soft sandstone.
0	2	—Coal.
14	0	—Sandstone, containing loose brown argillaceous sand.
3	0	—Loose sand shale, the surfaces coated with acicular crystals of sulphate of alumina, formed by the decomposition of pyrites.
0	2	—Coal, very much broken up by a sort of false bedding.
28	0	—Massive grey sandstone, having a rhombohedral fracture, and containing specks of slate and ferruginous matter.
0	1	—Coal.
5	0	—Soft grey shaly sandstone, exhibiting false bedding.
0	1	—Poor bony coal.
25	0	—Soft black shale, containing plates of coal and impressions of minute plants, and the surfaces stained with ferric oxide, alternating with a fine-grained conglomerate, containing micaceous scales.
26	0	—Yellowish-grey shale, containing thin plates of coal.
9	0	—Sandstone.
0	2	—Black carbonaceous slate, enclosed in hard massive sandstone.
17	0	—Hard, massive grey sandstone.
51	0	—Hard, conglomeratic, light grey sandstone, alternating with seams of black slate.
45	0	—Hard, massive sandstone, alternating with grey slaty micaceous sandstone.
1	0	—Soft grey shale.
33	0	—Alternating dark gray, flaggy and slaty sandstone, containing micaceous scales.
39	0	—Dark grey argillaceous shale, with talcky lustre.
0	10	—Dark greenish-grey shale, with talcky lustre, containing acicular crystals of sulphate of alumina, formed by the decompasition of pyrites.
0	3	—Soft black slate.
3	0	—Massive grey sandstone.
5	6	—Soft argillaceous shale.
25	0	—Massive, hard grey sandstone.
13	0	—Fine-grained, light grey conglomerate, alternating with thin strata of black micaceous sandstone.
26	0	—Fine-grained, dark grey, argillaceous shale, alternating with a hard grey sandstone, interstratified with a black micaceous sandstone.
17	0	—Massive, flinty, grey sandstone.
1	3	—Soft grey shale.
1	6	—Hard grey sandstone.
1	6	—Soft grey shale.
1	6	—Soft, yellowish-grey shale, of a talcky lustre.
4	0	—Very hard, massive bluish-grey sandstone, with occasional seams of a lead colored clay.
13	0	—Hard, massive grey sandstone.
0	10	—Grey slaty sandstone.
0	5	—Carbonaceous shale.
0	3	—Grey shale.
0	2	—Black coal slate.
3	4	—Grey sand shale.
0	4	—Black slate.
15	0	—Hard, massive grey sandstone, alternating with brownish-grey argillaceous shale.
22	0	—Dark, bluish-grey, slaty sandstone, alternating with shale of close texture.

* A paper read before the American Institute of Mining Engineers, at the Cleveland Meeting, October, 1875.

ft.	in.	
25	0	—Alternating grey, green and yellow shale.
5	0	—Green fossiliferous shale.
(B.)		
25	0	—Alternating shale as above, but softer.
165	0	—Hard, coarse-grained, reddish-grey sandstone, alternating with soft, yellow sandy shale.
12	0	—Greyish-brown sandstone.
43	0	—Alternating yellow, grey and green shaly sandstone.
50	0	—Soft, yellow sandy shale, interstratified with a massive, yellow sand-stone, alternating with a soft brown sandstone.
42	0	—Flaggy, olive sandstone, alternating with greenish-grey sandstone, containing iron concretions.
440	0	—Soft, green and olive sandstone, alternating with soft, yellow and hard grey sandstone, containing ferruginous specks, and having a distinct rhombohedral fracture. [That portion of section between A and B is exposed in tunnel and approaches.]

Ponent Red Sandstone and Shale (Lwer Catskill)—No. IX.

A study of the section has suggested the following subdivision of the whole formation, making its character more comprehensive:

VESPERTINE—No. X.

UPPER	—Alternating massive and flaggy sandstone	490
MIDDLE	—Coal-bearing strata	313
"	Conglomeratic strata, characterized by false bedding	380
LOWER	—Alternating less massive sandstone and shale	830
	Total thickness	2013

The 313 feet of coal-bearing strata contain nineteen coal seams of an average individual thickness of one inch and a half. Their thickness, if added together and combined with that of the numerous thinner seams and partings, scattered through the strata, dan not precisely located in the section, would be sufficient to form a solid seam of coal nearly four feet thick.

The occurrence of these coal beds in the Vespertine seems to forbid our separating this formation (No. X.) from the Coal Measures proper, the base of which has always been considered to be the conglomerate No. XII., as pointed out by Professor ROGERS.

While the period was one of incessant agitation and local currents, as indicated by the coarseness and false bedding of strata, yet most certainly, during its accumulation, there were those repeatedly occurring intervals of almost absolute repose, with constancy of sea-level, which are requisite for the growth of coal-producing vegetation.

The closeness of the beds to each other, and the similarity of the strata above and below the coal seams, with an apparent absence of a conglomerate, seem to show that, in the intervals between the vegetable growths, the strata were subjected to a regular oscillatory motion, and not to any sudden or paroxysmal action, by which the surface was elevated to maintain a vegetable life, and then submerged for the reception of a similar deposit to that which had previously formed the strata underlying the coal.

The fine-grained, argillaceous, homogeneous character of the strata of the lower sub-division of the formation indicates a greater depth during deposition than at any other time. The character of the lower member of the middle sub-division shows a greater agitation and stronger local currents.

No doubt, the force which evidently existed during the deposition of the lower part of the middle sub-division, attained its maximum intensity, and finally spent itself, in the comparatively regular, oscilllatory motion of the surface which we have supposed to exist during the formation of the coal-bearing strata.

The Vespertine, which in New York is a coarse, fragmental formation, or conglomerate, is in Pennsylvania and Ohio a fine fragmental formation, composed of sandstones and shales, and in Southern Indiana and Illinois it is principally an argillaceous and arenaceous limestone. This change in the constitution of the Vespertine evidently shows a quieting of the basin to the South-West, as it becomes more remote from the north-eastern portion of the Continent, whence the debris which formed its strata were derived.

In the course of the examination, remains of Vespertine life, both animal and vegetable, were found. Of the former, three varities of brachiopods and one conchifer were obtained in a stratum of soft fossiliferous green shale, 5 ft. thick, exposed in the cut at the east end of the tunnel and occupying a position in the section 777 feet above its lowest horizon. Impressions of minute plants were found *in situ*, in places indicated in the section. Numerous specimens of lepedodendra, calamites, etc., resembling those of the Coal Measures, were found at the west end of the tunnel in the enbankment composed of rocks excavated from the coal-bearing strata. A distinct horizon, between the animal and vegetable life, seems to exist in the formation as there is no intermingling of the remains of animal and vegetable forms.

Several years ago, Professor LESLEY published a description of two workable beds of coal in the Vespertine of Montgomery County, Va., one of which had a maximum thickness of eight feet and the other of four feet; and of fourteen small coal beds in the same formation underlying the red shale of No. XI, along the western flank of the Peaks Mountain, in Wythe County, next adjoining Montgomery, and south of the New or Kanawha River. Most of these beds showed a thickness of no more than two or three inches.

The discovery of these beds in Sideling Hill furnished an explanation of the occurrence of two small, but almost workable, beds of coal outcropping along the face of the Allegheny Mountain far beneath the conglomerate No. XII.

The existence of Coal Measures in No. X is therefore established.

The Delaware & Hudson Canal Co. have a coal brick machine in operation on their dock at Kingston, N. Y., for utilizing and working up the culm which accumulates at that point. The bricks made are composed of coal dust and pitch, and weigh about four and a-half pounds each. They burn very finely, and are used principally on the locomotives used by the Company which were constructed for burning English soft coal.—Pittston *Gazette*.

Remarkable Make of Rails.—The Britannia Iron Works, Middlesborough, England, turned out for the week, ending October 2nd, 1351 tons 5 cwt. 2 qr. 12 lb. of iron rails, working two sections of 40 lb. and 45 lb. per yard; and for the succeeding week, ending October 9th, 1414 tons 14 cwt. 2 qr. 26 lb., working two sections of 40 lb. and 46 lb. per yard, making a total for the fortnight of 2766 tons 10 lb.; a turn-out perhaps unequalled in the history of the branch. This reflects the highest credit upon the working economy of the works, which, under the energetic management of Mr. D. ROBERTS, and the successful applcatien of a new oven bottom on the puddling-furnaces, has recently been turning out, not only a large make, but a very superior quality of iron.

Investigations of Iron and Steel Rails made in Europe in the Year 1873.*

BY T. EGLESTON.

CONTINUED FROM PAGE 501.

PHÖNIX EISENHÜTTEN-GESELLSHAFT NEAR RUHRORT ON THE RHINE.

Dimensions in Millimetres.

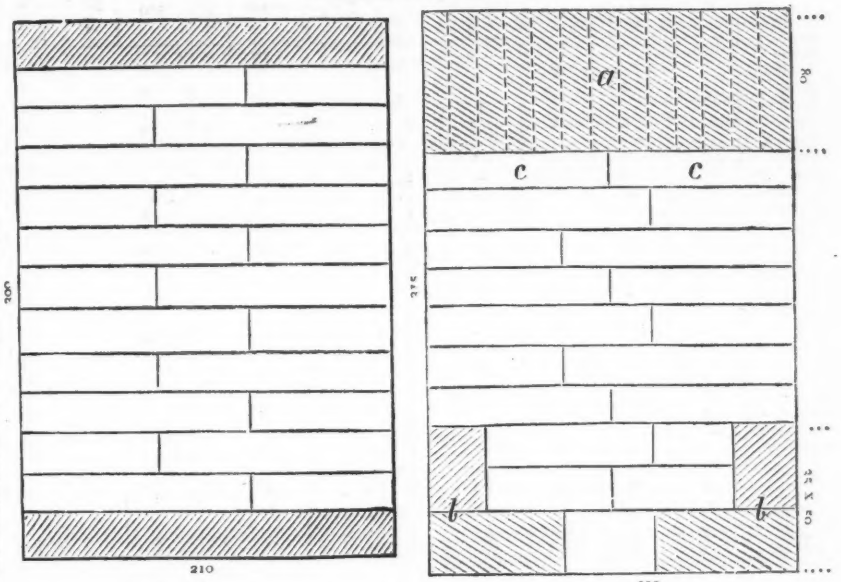


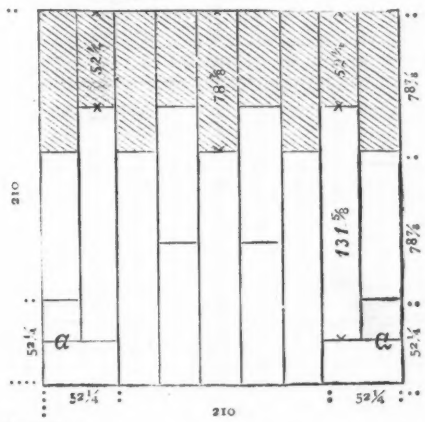
FIG. 1. Scale of ¼. FIG. 2.

TO FORM the head-plate a in Fig. 2, the package Fig. 1 is used. This is made of the best sorted puddle-bars, the side-plates—shaded in Fig. 1—being of once re-heated iron rolled into the above form. In the head-plate the longer edges of the original puddle-bars are placed vertically. The package Fig. 1 is heated, hammered under a 6-ton steam-hammer, and rolled out to a, Fig. 2. In Fig. 2, the plates b. b are of once re-heated good iron. This package, Fig. 2, is heated, hammered under a 6-ton steam-hammer, again heated, and rolled out to the finished rail. These rails are guaranteed for three years in Germany only.

In case the head is of steel, the package is made in the same way. The head-plate is rolled out of puddled steel bars; and to secure a good weld, the bars c. c. are of fine-grain puddled iron. These rails are guaranteed for five years in Germany only.

HOERDER BERGWERKS- UND HÜTTEN VEREIN, WESTPHALIA.

Dimensions in Millimeters.



Scale of ¼.

The shaded loupe-bars are of puddled steel; the others of tough iron. For the better formation of the foot of the rail, the bars a. a. are of re-heated tough iron.

The package is twice heated and hammered under a 6-ton steam-hammer, is again heated and rolled out to the finished rail.

After the second hammering the package has a cross-section of 0.183m. × 0.183m. These rails are guaranteed for five years, provided they are not used about stations or on grades of 1.6 or above.

As it is important to ascertain the cause of fracture, in order to avoid it, I made an effort to get from all the roads a complete history of rails broken, as far as it was possible, and also to collect the records of the mean temperature of the month and year, and other details as to whether the rail was broken on the inside or outside of a curve of a given radius, or by a train going up or down a grade. Such a history was compiled for me by the Paris & Lyons Railroad, for three of its auxiliary lines, month for month, for the years 1869, 1870, 1871, and 1872, and merits a most careful and attentive study. The first and third of these roads used the iron double-headed rails, exclusively, up to the year 1872, when the Geneva line commenced by putting down 15½ kilometres of steel rails. The Tarascon line has used them since 1869, in small quantities at first, but gradually increasing them until, in 1872, there were twenty-one km. of steel rails on the line of the road. The St. Germain line had not used steel rails up to 1872.

* A paper read at the St. Louis meeting of the American Institute of Mining Engineers, May, 1874.

STATISTICS OF RAILS BROKEN PER MONTH ON THREE OF THE AUXILIARY LINES OF THE LYONS RAILROAD.

DATES.	DESCENTS.				ASCENTS.			Alignments.	RADIUS OF CURVATURE.			Form of Rail.	RAILS BROKEN.		Total.	Mean length of time that the rail remained on the road.	Gross tonnage by kilometers, by single track, and by year.	REMARKS.
	Above 0·008	From 0·008 to 0·005	From 0·005 to 0·002	From 0·002 to ascents 0·002	Fo m 0·002 to 0·005	From 0·005 to 0·008	Above 0·008		Above 500	From 500 to 301	From 300 and below.		After being turned over.	Before being turned over.				
—LINE FROM AMBERIEU TO GENEVA.—																		
Year—1869																		
January	....	1	....	....	...	....	.....	....	1	.....	.....	D. C.	.....	1	1			D. C. signifies double headed rail. V. signifies American rail.
February	....	.. .	....	1	...	....	.....	....	1	.....	.....	"	1	..	1			
March	....	1	1	....	1	....	.....	1	1	1	.....	"	1	2	3			
July	1	....	....	....	....	....	.....	1	.....	.....	.....	"	1	.....	1	1858.46		
August	....	....	....	....	....	....	.....	....	.....	1	.....	"	1	.....	1			
September	....	....	....	1	1	....	.....	....	1	.....	.....	"	1	.....	1			
November	....	....	....	....	....	....	.....	..	.....	1	.....	"	.....	1	1			
December	....	....	1	....	1	...	.....	....	2	.....	.....	"	1	1	2			
Total, 1869	1	2	2	3	3	0	0	2	6	3	0		6	5	11			
Year—1870.																		
January	1	1	....	2	....	....	.....	1	3	.....	.....	"	4	.....	4			
February	....	....	....	..	1	2	.....	2	1	.....	.....	"	3	.....	3			
March	....	1	1	....	....	....	.....	....	2	.....	.....	"	1	1	2			
April	...	...	....	....	....	1	.....	1	.....	.....	.....	"	.....	1	1			
June	...	....	....	1	....	....	.....	....	1	.....	.....	"	.....	1	1	1858.97		
August	1	....	...	....	....	...	.....	1	.....	.....	.....	V.	.....	1	1			
September	....	....	....	....	.	....	1	1	.....	.....	.....	D. C.	1	... ..	1			
October	1	....	....	....	....	....	.....	1	.....	.....	.....	"	.....	1	1			
November	....	....	....	3	1	....	1	....	4	1	.....	"	3	2	5			
December	2	....	2	1	4	....	.....	4	1	4	.....	"	3	6	9			
Total, 1870	5	2	5	7	6	3	2	11	12	5	0		15	13	23			
Year—1871.																		
January	3	7	10	7	5	2	4	17	15	6	.....	D. C.	23	15	38			
February	2	2	1	5	.	1	1	4	7	1	. ..	"	8	4	12			
March	2	2	2	1	1	2	.....	3	6	1	.....	"	8	2	10			
April	1	1	1	....	....	1	.....	1	2	.....	.....	"	3	.....	3			
May	1	1	...	....	....	....	.....	....	1	1	...	"	1	1	2			
July	1	....	....	....	...	....	.....	1		.....	.....	"	.....	1	1	1860.34		
August	1	2	....	....	....	....	1	2	2	.....	.....	"	3	1	4			
September	....	....	....	....	....	1	.....		1	.....	.....	"	.....	1	1			
October	....	.. .	....	....	1	....	.....	1	.....	.....	.....	"	1	.....	1			
November	....	1	....	3	...	2	.....	3	3	.....	.....	"	5	1	6			
December	7	....	....	4	....	....	.....	6	2	3	....	"	8	3	11			
Total, 1871	18	16	14	20	7	8	6	38	39	12	0		60	29	89			
Year—1872.																		
January	3	....	.. .	1	3	2	2	3	4	4	.... .	"	9	2	11			
February	1	...	....	1	3	1	....	2	4	.....	.....	"	4	2	6			
March	....	....	....	....	1	1	3	4	1	... .	.....	"	2	3	5			
April	1	1	....	1	....	....	1	1	1	2	.....	"	2	2	4			
June	....	....	...	1	....	1	....	1	1	...	.....	"	1	1	2			
July	1	....	....	1	....	....	1	1	1	1	.....	"	1	2	3	1862.01		
August	....	1	....	1	....	....	....		2	.....	.....	"	2	.....	2			
September	1	....	.. .	3	....	....	....	4	.....	.....	.....	"	2	2	4			
October	....	....	....	1	....	....	1	..	1	1	.....	"	2	.....	2			
November	3	....	....	1	....	....	1	1	2	2	.....	"	3	2	5			
December	7	....	.. .	1	....	....	2	3	4	3	. ....	"	9	1	10			
Total, 1872	17	2	0	12	7	5	11	20	21	13	0		37	17	54			
—LINE FROM TARASCON TO CETTE.—																		
Year—1869																		
February	....	...	....	1	....	.. .	.....	1	.....	.....	.....	D. C.	1	.....	1			
November	....	....	....	2		....	.....	2	.....	.....	.....	"	2	....	2	1859.00		
December	....	....	....	1	....	....	.....	....	1	.....	.....	"	1	.....	1			
Total, 1869	0	0	0	4	0	0	0	3	1	0	0		4	0	4			
Year—1870.																		
January	. ..	....	...	1	...	....	.....	....	1	.....	.....	"	1	... .	1			
February	....	....	.. .	1	....	....	.....	1	.....	.....	.....	"	.....	1	1			
March	....	....	....	1	.. .	....	.....	1	.....	.....	.....	"	1	.....	1	1860.00		
July	...	....	....	1	....	....	.....	1	.....	.....	.....	"	1	.....	1			
December	....	....	....	2	....	....	.....	1	1	.....	.....	"	1	1	2			
Total, 1870	0	0	0	6	0	0	0	4	2	0	0		4	2	6			
Year—1871.																		
January	....	....	....	2	....	....	.....	1	1	.....	.....	"	2	.....	2			
February	....	....	....	1	....	...	.....	1	.....	.....	.....	V.	.....	1	1			
June	....	. ..	....	1	....	....	.	1	.....	. ....	.....	"	.....	1	1	1861.00		
October	....	....	....	....	1	....	.....	....	1	.....	.....	"	.....	1	1			
November	...	.....	. ..	1	....	.	.....	1	.....	.....	.....	D. C.	1	...	1			
Total, 1871	0	0	0	5	1	0	0	4	2	0	0		3	3	6			
Year—1872																		
January	....	..	....	1	....	....	.....	1	.....	.....	.....	D. C.	1	.....	1			
March	....	....	....	2	....	....	.....	2	.....	.....	.....	DC&V	1	1	2	1862.00		
December	....	....	....	1	....	....	.....	..	1	.....	.....	V	.....	1	1			
Total, 1872	0	0	0	4	0	0	0	3	1	0	0		2	2	4			
—LINE FROM ST. GERMAIN-DES-FOSSES TO BRIONDE.																		
Year—1859.																		
January	....	..	....	1	....	....	.....	....	1	....	.....	D C	1	.....	1			
February	....	....	1		....	....	.....	1	.....	.....	.....	"	1	.....	1			
October	....	.. .	....	1	....	....	.....	1	.....	.....	.....	"	1	..	1	1859.01		
November	. ..	1	....	....	....	....	.....	....	...	1	.....	"	.....	1	1			
December	....	.	....	....	....	1	.....	....	1	.....	.....	"	.....	1	1			
Total, 1869	0	1	1	2	0	1	0	2	2	1	0		3	2	5			
Year—1870.																		
February	....	....	1	....	....	....	.....	1	.....	.....	.....	"	1	.....	1			
April	....	...	1	....	..	....	.....		1	.....	.....	"	1	.....	1			
October	...	1	....	..	1	....	.....	2	...	.....	.....	"	2	.....	2	1859.91		
November	....	1	..	1	..	....	.....	1	1	.....	.....	"	1	1	2			
December	....	..	1	....	....	....	.....	...	1	...	.....	"	1	.....	1			
Total, 1870	0	2	3	1	1	0	0	4	3	0	0		6	1	7			

STATISTICS OF RAILS BROKEN PER MONTH ON THREE OF THE AUXILIARY LINES OF THE LYONS RAILROAD.

LINE FROM ST. GERMAIN-DES-FOSSES TO BRIONDE—*Continued.*

DATES.	DESCENTS.				ASCENTS.			Alignments.	RADIUS OF CURVATURE.			Form of Rail.	RAILS BROKEN.		Total.	Mean length of time that the rail remained on the road.	Gross tonnage by kilometers, by single track, and by year.	REMARKS.
	Above 0.008	From 0.008 to 0.005	From 0.005 to 0.002	From 000.2 to ascents 0.002	From 0.002 to 0.005	From 0.005 to 0.008	Above 0.008		Above 500	From 500 to 301	From 300 and below.		After being turned over.	Before being turned over.				
Year—1871.																		
January ..	.....	2	.....	.....	.....	.....	....	1	1	....	....	D. C.	2	....	2			D. C. signifies double headed rail V. signifies American rail.
February...	.....	1	1	.....	.....	.....	....	1	1	....	....	"	2	....	2			
April. ...	.....	.....	1	1	.....	.....	....	1	1	....	....	"	2	....	2			
August....	.....	.....	1	.....	.....	.....	....	....	1	....	....	"	1	....	1	1860.95		
October....	.....	1	.....	1	1	.....	....	..	2	1	..	I & V	2	1	3			
November..	... ..	4	.....	1	.....	.....	....	2	3	....	....	D. C.	4	1	5			
December..	.....	3	1	1	.....	3	...	1	7	....	....	"	7	1	8			
Total, 1871	0	11	4	4	1	3	0	6	16	1	0		20	3	23			
Year—1872.																		
January....	.....	.....	.....	.....	1	.....	....	1	.....	....	....	V.	....	1	1			
April.....	.....	.....	.....	1	.....	.....	....	...	1	....	....	D. C.	....	1	1			
May.....	.....	.....	.....	.....	.....	1	....	1	.....	....	.. ..	V.	....	1	1			
August...	.....	.....	.....	2	.....	1	....	2	1	....	....	D. C.	3	....	3	1862.00		
October	.....	1	.....	.....	.....	.....	....	....	1	....	....	"	....	1	1			
November..	.....	1	1	1	..	.....	...	2	1	....	....	"	3	....	3			
December..	.....	1	.....	.....	.....	.....	....	1	.....	....	...	"	1	....	1			
Total, 1872	0	3	1	4	1	2	0	7	4	0	0		7	4	11			

STATISTICS OF RAILS BROKEN PER YEAR ON THE AUXILIARY LINES OF THE PARIS AND LYONS RAILWAY.

DATES.	DESCENTS				ASCENTS			Alignments.	RADIUS OF CURVATURE			Form of rails.	RAILS BROKEN		Total.	Mean length of time that the rails remained upon the road.	Gross tonnage by kilometers by single track & by year.	REMARKS.
	Above 0.008	From 0.008 to 0.005	From 0.005 to 0.002	From 0.002 to ascents 0.002	From 0.002 to 0.005	From 0.005 to 0.008	Above 0.008		Above 500	From 500 to 301	From 300 and below.		After being turned over.	Before being turned over.				
LINE FROM AMBERIEU TO GENEVE.																		As the road is composed of two tracks, each rail supports only half the tonnage
1869	1	2	2	3	3	0	0	2	6	3	0	D C	6	5	11	1858. 46	474,272	
1870	5	2	3	7	6	3	2	11	12	5	0	DC&V	15	13	28	1858. 97	613,315	
1871	18	16	14	20	7	3	6	38	39	12	0	D C	60	29	39	1860. 34	752,358	
1872	17	2	0	12	7	5	11	20	21	13	0	D C	37	17	54	1862. 01	818,974	
LINE FROM TARASCON TO CETTE.																		
1869	0	0	0	4	0	0	0	3	1	0	0	D C	4	0	4	1859. 00	1,620,459	
1870	0	0	0	6	0	0	0	4	2	0	0	D C	4	2	6	1860. 00	1,661,000	
1871	0	0	0	5	1	0	0	4	2	0	0	DC&B	3	3	6	1861. 03	1,707,000	
1872	0	0	0	4	0	0	0	3	1	0	0	D C	2	2	4	1862. 00	2,051,311	
LINE FROM ST. GERMAIN-DES-FOSSES TO BRIONDE.																		
1869	0	1	1	2	0	1	0	2	2	1	0	D C	3	2	5	1859. 01	587,359	
1870	0	2	3	1	1	0	0	4	3	0	0	D C	6	1	7	1859. 91	620,000	
1871	0	11	4	4	1	3	0	6	16	1	0	DC&V	20	3	23	1860. 95	650,920	
1872	0	3	1	4	1	2	0	7	4	0	0	D C	7	4	11	1862. 00	681,748	

The following table shows the relative proportions of the different iron and steel rails laid down on these lines, and the relative proportions of iron rails broken in the four cold months, as compared with the eight others. It is remarkable to see, in this table, how much better the American rail resists than the double-headed.

PROPORTION BETWEEN THE IRON RAILS BROKEN AND THOSE LAID, ON THE AUXILIARY LINES OF THE LYONS RAILROAD.

Date.	Length of Single Track.				Length of rails, respectively.		No. of rails.		No. of rails broken.				Proportion for 100,000.				Observations.
	Steel rails.	D Iron rails.	D C Iron rails.	Total.	V.	D. C.	V.	D. C.	In Jan., Feb. Nov., Dec.		For the other months.		In Jan., Feb. Nov., Dec.		For the other months.		
									V.	D. C.	V.	D. C.	V.	D. C.	V,	D. C.	
LINE FROM AMBERIEU TO GENEVE.																	The *fracture* of iron rails only is given in this table.
	k.m.	k.m.	k.m.	k.m.	k.m.	k.m.											
1869		7.354	222.176	229.530	14.708	444.352	2,451	74,058	....	5	....	6	....	6.75	.. .	8.10	
1870		18.837	210.693	" "	37.674	421.386	6,279	70,231	....	21	....	7	....	29.90	....	9.96	
1871		45.887	183.643	" "	91.774	367.286	15,296	61,214	....	67	....	22	....	109.45	....	35.94	
1872	15.655	63.2251	150.650	" "	126.450	301.300	21,075	50,217	....	32	....	22	....	63.60	....	43.81	
LINE FROM TARASCON TO CETTE.																	
	k.m.	k.m.	k.m.	k.m.	k.m.	k.m.											
1869	01.68	153.345	46.799	202.312	310.690	93.598	51,782	19,500	....	4	....	....	...	20.51	....	....	
1870	66.89	161.860	33.763	" "	323.720	67.256	53,953	14,068	....	4	....	2	....	28.43	....	14 22	
1871	8.231	171.082	22.999	" "	342.164	45.998	57,027	9,583	1	3	2	....	1.75	31.31	3.50	....	
1872	21.190	171.486	9.636	" "	342.972	19.272	57,162	4,015	1	1	1	1	1.75	24.90	1.75	....	
LINE FROM ST. GERMAIN-DES-FOSSES TO BRIONDE.																	
		k. m.	k.m.	k.m.	k.m.	k.m.											
1869	....	23.840	181.752	205.592	47.680	363.504	7,947	66,092	....	4	....	1	....	6.05	....	1.51	
1870	....	37.706	167.886	" "	75.412	335.772	12,569	61,049	....	4	....	3	....	6.55	....	4.91	
1871	....	57.472	148.120	" "	114.944	296.240	19,157	53,862	....	17	1	5	...	31.56	5.22	9.28	
1872	....	61.893	143.699	" "	123.786	287.398	20,631	52,254	1	4	1	5	4.84	7.65	4.84	9.56	

The line from Amberieu to Geneva has in plan no curve with a radius inferior to 400m., and in profile it has no elevation which exceeds 0.013. This line, therefore, represents the mean of the lines of large curves and small inclinations, and lines of large curves and great inclination.

It is traversed by two Expresses daily, that of Geneva and that of Italy, which go at the rate of 50 to 55 km. per hour, and frequently at as high a speed as 75 to 82 km. The traffic is very great. Throughout the length of this line there is a very great variation in temperature in the different seasons. In summer, the temperature is 35°C.=93°F. and the greatest cold of winter is —18C°=.40F°.

The line from Taras:on to Cette is one of the lines of large curves and small inclinations. The speed is the same as for the Geneva line, but the quick trains are heavier. The traffic is great, though not as great as on the Geneva line. The temperature is rather hot than otherwise, and no very great amount of cold.

The line from St. Germain-des-Fosses to Briond has a great many curves, a very large number of which have a radius inferior to 400m., several of them below 300m. The maximum inclination is not over 0.010. The least speed is generally 40km. the hour, and the greatest is accidentally 60km. The traf-

fig is less than that upon the previous line; but about the same as that of the Geneva line. The temperature varies from 35° C.=95° F. to —10° C.=14° F.

It will be seen by the table given below that on the Geneva line, where the greatest cold occurs, by far the greater portion of the rails were broken, during the four years, in the months of January, February, and December; that on the St. Germain line, where the next lowest temperature occurs, they were broken in November and December; while on the line where the temperature is about equal, they were broken in January and December; or, in general, that the cold months are those in which the greatest number of fractures occur.

RECAPITULATION of the No. of Rails broken per month on the auxiliary lines of the Lyons Railroad.

	Amberieu to Geneva.					Tarascon to Cette.					St. Germain-des-Fosses to Brionde.				
	1869.	1870.	1871.	1872.	Total.	1869.	1870.	1871	1872.	Total	1869	1870.	1871.	1872.	Total.
Jan ...	1	4	38	17	50		1	2	1	4	1		2	1	4
Feb ...	1	3	12	6	22	1	1	1		3	1	1	2		4
March..	3	2	10	5	20		1		2	3					
April...		1	3	4	8							1	2	1	4
May....			2		2									1	1
June...		1		2	3			1		1					
July ...	1		1	3	5		1			1					
August.	1	1	4	2	8								1	3	4
Sept....	1	1	1	4	7										
Oct....		1	1	2	4			1		1	1	2	3	1	7
Nov....	1	5	6	5	7	2		1		3	1	2	5	3	11
Dec	2	9	11	10	32	1	2		1	4	1	1	8	1	11

TO BE CONTINUED.

A Great Coal Case.

A LARGE SUM OF MONEY INVOLVED, AS ALSO THE RIGHT OF THE GREAT COAL COMPANIES TO COMBINE TO CONTROL WAGES AND THE MARKETS.

THERE is a prospect that the Court of Schuylkill will be called upon to try one of the most important cases ever known to the Courts of this Commonwealth. The case arises directly from the long strike of the Spring and Summer of 1875. To give a full history of the circumstances from which this case has risen would be to make a very long story. We have space for an outline of them.

The case is that of GEORGE W. HUNTZINGER and HENRY L. CAKE against the Philadelphia Coal Company, the Green Land Company, ISRAEL W. MORRIS, GEORGE B. MARKLE, ASA. PACKER, THOMAS P. ELLIS, and NAPOLEON A. JENNINGS, doing business as M. THOMAS & SONS. The complainants first aver the fact that the Philadelphia Coal Company and the Green Land Company were chartered, giving dates, and then state that on the 28th of May, 1874, said companies entered into a writ en contract with each other, in which complainants were interested as parties of the one part. The Philadelphia Coal Company owned and operated three valuable collieries in Schuylkill County, working the Mammoth Vein. Before the contract previously mentioned was entered into, the Philadelphia Coal Company was governed and managed by a board of five directors, viz: GEO. W. HUNTZINGER, HENRY L. CAKE, G. DAWSON COLEMAN, JACOB HUNTZINGER and DAVID P. BROWN. Up to and prior to reducing the aforesaid contract to writing, the verbal agreement and terms of CAKE and G. W. HUNTZINGER, in relation to the sale of a portion of their stock in the Philadelphia Coal Company, were with the Lehigh Valley Railroad Company; the negotiations were with the officers of that company, and the consideration for said stock was to have been paid, and was paid, by the Lehigh Valley Railroad Company, and it wasn't until the contract was being reduced to writing that complainants first heard of the Green Land Company, and the desire of the Lehigh Valley Railroad Company, that the Green Land Company should be a party to the contract in their stead. The verbal agreement was for the sale of 17,500 shares of the capital stock of the Philadelphia Coal Company, but when it came to writing the contract, the Green Land Company demanded sufficient stock to give them control of the board of directors. So four additional shares of stock were transferred to them and a contract entered into. On the 3d of June, 1874, JACOB HUNTZINGER resigned his position as director, and later in the same month, H. L. CAKE, G. W. HUNTZINGER, ASA PACKER, ISRAEL W. MORRIS and GEO. B. MARKLE were elected directors of the Philadelphia Coal Company, the last three being designated by virtue of the contract. So the Philadelphia Coal Company passed under the management of the Green Land Company, 17,504 shares of stock being vested in that corporation and 17,496 shares in the complainants.

In the leases granted to the Philadelphia Coal Company by the City of Philadelphia, trustees under the will of STEPHEN GIRARD, it was stipulated that "the lessees shall and will work the mines *bona fide*, continuously, and with all due diligence, to the same extent that mines of the same capacity are usually worked, taking into consideration the season of the year, the demand for coal, and the facilities for transportation of it to market." By the terms of the leases as well as by the true intent of the contract made it was incumbent on the present management of the Philadalphia Coal Company to work the three collieries "*bona fide*, continuously, and with all due diligence, to the same extent that mines of the same capacity are usually worked;" both to comply with the leases and for the profit of the stockholders. The collieries, it is alleged, can only lie idle at the risk of great and serious damages.

We come now to that portion of the case of most interest and which justifies our statement that it arises directly from the long strike. After stating that MORRIS and PACKER were directors of the Green Land Company, at the time they were directors of the Philadelphia Coal Company; that G. B. MARKLE was a stockholder in the Lehigh Valley Railroad Company, a corporation asserted to be the principal owner of stock in the Green Land Company, and that ASA PACKER was, and is, a large, if not the largest, stockholder in the Lehigh Valley Railroad Company, the complainants go on to say:—

"That a short time before the first day of January last, an *unlawful* combination, confederacy and agreement was entered into by and between certain corporations, including the Wilkes-Barre Coal and Iron Company, the Pennsylvania Coal Company, the Delaware, Lackawanna and Western Railroad Company, together with other railroad and coal companies, who, together, owned over 200,000 acres of anthracite coal land, the same being nearly the entire body of such coal land in the State of Pennsylvania, and of the world, as well as most of the outlets to market therefrom, whereby the said corporations were enabled to control the cost of production and the prices of coal in such an arbitrary manner as would enable them to oppress the consumers of coal and subject the miners and laborers about the mines to such reduced rates of wages as they might dictate. That such combined companies owned and controlled not less than $200,000,000 in value in anthracite coal lands, railroads, and their appurtenances. That said corporations, owning and posessing such a vast amount of capital, and possessed with extraordinary powers, sought by such combination, confederacy and agreement together, to act as a unit in the control of the prices of coal and the cost of production as aforesaid. That the said corporations so unlawfully combining, confederating and agreeing together, had, among other things, the object and purpose of reducing the wages of the miners and laborers working in and about the coal mines in the whole of the anthracite coal lands aforesaid. That the said the Lehigh Valley Railroad Company is also a large owner directly or indirectly, through other corporations whose stock it owns, including that of the Green Land Company as aforesaid, in said anthracite coal lands, amounting to many thousands of acres. That in the said unlawful combination, confederacy and agreement, the said the Lehigh Valley Railroad Company, the Green Land Company, and the said ISRAEL W. MORRIS, ASA PACKER, and GEORGE B. MARKLE were sympathizers, aiders and supporters."

The result of this combination was to suspend mining operations in the anthracite fields, stopping, among others, the collieries of the Philadelphia Coal Company. This stoppage was against the consent and remonstrance of the complainants, who urged that the men should be paid the wages they demanded and the collieries run full handed. In consequence of the stoppage, which lasted from the first of January until June 20th, an opportunity to mine, ship, and sell 150,000 tons of coal was lost. A profit of $2 a ton could have been made on this coal. Thus $300,000 was lost. The complainants also state that by the stoppage the mines of the Philadelphia Coal Company were damaged at least $100,000. MORRIS, MARKLE and PACKER, it is claimed, have become liable to the Philadelphia Coal Company for $400,000, loss of profits, and damages to pay to the mines.

The complainants "further aver and say, that the said the Green Land Company, upon the claim that the profits of the said the Philadelphia Coal Company, for the year ending June 1st, 1875, have not been sufficient to pay the amount of profits to accrue to the said the Philadelphia Coal Company, according to the guarantee and undertakings of said complainants in said contract, threaten to sell a portion of the collaterals received from the said complainants, viz.: So many of the bonds of the Lehigh Valley RR. Company, held as collateral security as aforesaid, as may be necessary to make up the sum of $108,769 15, with interest from the 1st day of June last, on the 30th day of November, A. D, 1875, at the Merchants' Exchange, in the city of Philadelphia, at 12 o'clock noon, by M. THOMAS & SONS, auctioneers."

Upon this showing the complainants ask the Court to grant a preliminary injunction to restrain THOMAS & SONS from disposing of the bonds on the 30th of November, and to restrain the Green Land Company "from selling or otherwise disposing of all or any portion of said bonds, either at public or private sale, at any other time or place, contrary to the consent and agreement of the said complainants;" also to order an account between complainants and defendants, the latter to be charged with the loss of profits and damages mentioned before; also to declare null and void the contract "made between the said complainants of the first part and the said the Green Land Company of the second part, or such parts thereof as may be determined by this Honorable Court, are *ultra vires*, and beyond the legal authority of the said the Green Land Company to make and enter into;" and also that the Court "shall further order and decree that the said $200,000 of the bonds of the said the Lehigh Valley Railroad Company, and said 17,496 shares of stock in the said the Philadelphia Coal Company, held by the Green Land Company, and belonging to these complainants as aforesaid, shall be surrendered and delivered up to the said complainants."

The Court has ordered service on the defendants and fixed Saturday morning next as the time to hear arguments on the preliminary injunction asked for. Counsel for complainant are Messrs. F. P. DEWEES, JOHN W. RYAN and HUGHES & FARQUHAR.

This case will be one of great importance, as it not only involves an immense sum of money, but it will also involve the right of the great coal companies to combine together to control wages and the coal markets.—Pottsville *Miners' Journal*.

Illuminating Gas.

Address by Prof. CHANDLER, before the Gas Light Association.

IT is interesting to consider the condition of mankind before the introduction of coal-gas, when wood fires, pine torches, and rushlights were the most convenient, because the only, means of obtaining artificial illumination. Lamps were finally introduced, but they were simply open, smoky lamps, in which crude animal or vegetable oil, or petroleum, was burned, without a chimney. They were burned by means of a wick, and often, when it was desired that the lamps should never go out, as in the temples, wicks of asbestos were used. The custom of maintaining fires or lamps which should never be allowed to go out arose undoubtedly from the difficulty of kindling a fire without matches or even steel.

The manufacture of candles was coeval with the persecution of the early Christians. Forced to seek hiding places in the caves and catacombs, the want of artificial light was necessarily felt, and it is supposed that with them first began the use of modern candles. Even in the sixteenth century wax candles were used to a very limited extent, and as late as the year 1800 they were considered a great luxury. Cheaper candles were made of tallow with a twisted tow wick. At a later period spermaceti and stearic acid (1820) were introduced.

Among the first great improvements in lamps was the addition of a flat socket for the wick, which was made to move up and down by means of a horizontal spindle and toothed wheel which could be turned by the fingers as required. This was known as the Worm lamp. A still greater improvement was the Argand lamp, which had a round hollow wick and a chimney. This improvement was made in the latter part of the eighteenth century. The Carcel lamp was introduced in 1800.

During those early times, either to secure safety from fires, or else to prevent political meetings, lights were extinguished by law at a certain hour at night. In fact, the curfew bell, which rang at eight o'clock, was the signal of the authorities to the people to put out their lights and go to bed. This would seem to us great hardship, but to our early ancestors it was comparatively of little consequence, for as they could neither read nor write, they had very little use for lights after that hour.

There is another phase of this question which is very interesting, and I will simply allude to it in passing. The advantage which we get from having our streets well lighted was almost entirely unknown until the introduction of coal-gas. In early times, laws were enacted to compel persons to put lights in their windows in order to light the highways. In the fifth century, the streets

of Edessa and Antioch were lighted by dim lamps placed in the windows of the houses. In 1525, the English Parliament passed a law compelling persons who lived upon the street, to place lanterns in their windows. In 1716, this law was re-enacted and enforced, and it required lamps to be burned from 6 o'clock until 11, having a penalty for each failure to keep them so burning. An enterprising person contracted to do the work at six shillings per annum for each householder. In 1662, LAUDATI organized a corps of link or torch boys to accompany pedestrians at night, charging from three to five sous per half hour; the boys being provided with half hour glasses to mark the time. In 1667, NICHOLAS DE REYNIO, Lieutenant-General of Police in Paris, stretched chains across the streets, and hung glass lanterns upon them. This marks an era in street-lighting. Still these lights seemed only to make darkness visible. They were oil lamps with one or two wicks, but no chimney. ACCUM stated to the House of Commons that two of their lights were equal to one "tallow dip." In fact, till our streets were lighted by gas, foot pads and burglars held sway during the hours of darkness, and single pedestrians rarely ventured out at night.

THE EARLY HISTORY OF GAS.

About the beginning of the seventeenth century, VAN HELMONT noticed that when animal or vegetable substances were heated in closed vessels, vapors or spirits were obtained which burned with a bright flame. Sometime previous to 1691, Dr. JOHN CLAYTON prepared gas from the bituminous coal of Wigan, collected it in bladders, and burned it for the amusement of his friends. In 1726, Dr. STEPHEN HALES made similar experiments with Newcastle coal. The Bishop of Llandaff showed, in 1767, how gas evolved from coal might be conveyed in tubes, and in 1786, Dr. PICKEL, Professor of Chemistry at Würzburg, lighted his laboratory with the gas obtained by the dry distillation of bones. In 1787, Lord DUNDONALD, of Culross Abbey, in Scotland, took out a patent for making coal tar, and erected ovens for the purpose. The coal gas produced was burned at the Abbey as a curiosity. The real inventor of practical gas-lighting was WILLIAM MURDOCH, who, in 1792, lighted his house and office at Redruth, in Cornwall, with gas made from coal, and astonished his neighbors still more by adapting the new light to a small steam carriage in which he rode to and from the mines. He soon removed to Scotland, and, in 1797, lighted his premises at Old Cumnock, in Ayrshire, with coal-gas. In 1798, he constructed gas works at the shops of BOULTON, WATT & Co. at Soho, and first publicly exhibited the gas in 1802 at the Peace of Amiens, when he showed two enormous flames of coal gas, burning from two copper vases, at these works. In 1805, the cotton mills of PHILLIPS & LEE, at Salford, were lighted with gas by BOULTON, WATT & Co., under the direction of MURDOCH; and at about the same time, the mills at Sowerby Bridge were lighted by the same firm, under the direction of Mr. CLEGG. In 1799, the French engineer, LE BON, took out a patent in France for making gas from wood, with which he proposed to light Paris. In 1804, WINSOR lectured on gas at the Lyceum Theater in London, exhibiting the gas, but making a great mystery of the process. He finally obtained permission to light a few street lamps with gas in Pall Mall, which he did in 1809, and organized the National Light and Heat Company, applying for a charter, which was refused. A great newspaper war was then initiated by him, in order to create a popular interest in the new light. In 1810, Parliament authorized the king to grant a charter within three years.

On December 31, 1813, Westminster Bridge was lighted, and soon after the oil lights in the streets of St. Margaret's, Westminster, were replaced by gas, and the next year, 1815, Guildhall was lighted. Still, prejudice against the new light was so intense, even on the part of men of science, that it seemed at one time to present an insurmountable obstacle to its further progress. DAVY (afterwards Sir Humphrey) ridiculed the idea by asking if it were intended to take the dome of St. Paul's for a gasholder. The popular ignorance, with regard to gases in general, was so great that when gas was finally admitted into the House of Commons, the architect directed that the pipes be placed four or five inches from the walls lest their heat should fire the building. Popular prejudice was by no means the only obstacle to the introduction of gas-lighting. The apparatus and machinery had to be invented; men had to be instructed to make them, and others to use them. Suitable pipes for distributing the gas could not be obtained. Wood and paper were patented, gun barrels were screwed together, till, finally, wrought-iron pipes were supplied. In 1822 there were four great companies in London, using 1315 retorts and 47 gasholders, and making 397,000,000 cubic feet of gas annually. Now, every large city in the civilized world is lighted by gas, giving rise, with the collateral business of making the fixtures, burners, etc., and working up the waste products, to one of the most extensive industries.

The manufacture of gas was first attempted in the United States at Baltimore, without success till 1821. It was introduced in Boston in 1822, and in 1823 the New York Gas-Light Company was started, though it was not in successful operation until 1827.

There are now probably 700 to 800 companies in the United States, with an aggregate capital of $70,000,000 or more.

MATERIALS USED FOR MAKING GAS.

A great many materials have been introduced for the manufacture of gas, but, until very recently, coal has been the only material that has been used to any extent on a very large scale. All vegetable and animal substances, when exposed in close vessels to a red heat, undergo destructive distillation, yielding gas, water, and tar, and leaving a residue of charcoal or coke. A few only are adapted for the economical production of illuminating gas. Bituminous coal is the material generally selected, though under certain circumstances several others have been, and are even now, employed. The most important of these are petroleum or some of its less valuable products (as naphtha or residuum), rosin, wood, peat, cheap oils, and fats. The mixture of hydrogen and carbonic oxide called "water-gas," produced by passing steam over red hot coke, charcoal, or anthracite, or a mixture of steam and petroleum vapor or gas through a red hot retort, has been, and is now, employed with success in the manufacture of illuminating gas, its want of illuminating power being supplied by rich gases from other materials.

This subject is doubtless familiar to you all, though many of the figures I shall give were obtained some years ago by the officers of the Manhattan Company, a company which has always been foremost in making chemical investigations into the nature of the materials and products of this industry. They developed important facts concerning the character of the gas, and the quantity obtained from different varieties of our ordinary coal. What we call caking coals, give us a considerable quantity of a rather low quality of gas, and cannel coals give us a much richer gas, as is shown by the table I have prepared here.

Coal-gas is made from bituminous coal. The following are the most important varieties of mineral coals:

1. Anthracite.
2. Bituminous—non-caking, caking, cannel.
3. Lignite, or brown coal.

In addition to these coals there are bituminous shales, such as Boghead mineral from Scotland, the "Hartley mineral," called by mistake Wollongongite from Australia, and the paper shales from Germany. There are also asphaltic minerals which, while they are never used alone are very important when added to poor coals, to the extent of 5 or 10 per cent., as enriching materials for the purpose of improving the quality of the gas. The most important of these asphalts are Albertite from Nova Scotia and Grahamite from West Virginia. These asphalts produce large quantities of extremely rich gas, but their cost limits the quantity that can be used. Next to these in quantity and quality of the gas, come the rich bituminous shales above mentioned; but they, too, are not found in sufficient quantities to be used alone. Of true coals the cannels yield the richest gas, and in England they are sometimes used exclusively. The caking coal is, however, the chief material employed. The advantage of this variety of coal is due to its abundance and consequent cheapness, and to the fact that, when heated, it undergoes a kind of fusion, and furnishes a compact porous coke of great value as fuel.

TO BE CONTINUED.

SELECTED LIST OF PATENTS.

FOR THE WEEK ENDING NOV. 27, 1875.

RELATING TO MINING, METALLURGY, GAS MAKING, ENGINEERING, &c. REPORTED FOR THE "ENGINEERING AND MINING JOURNAL" BY LOUIS BAGGER & CO., SOLICITORS OF PATENTS, WASHINGTON, D. C.

169,810. Alloys for Preventing Incrustation upon Metals, O. Holden, New York, N. Y.—An alloy for preventing incrustation upon metals, consisting of zinc and tin, lead, bismuth, and antimony, in the proportions set forth.

169,791. Metallic Arched Trussbridges, Jas. B. Eads, St. Louis, Mo.—Short trussed extensions are jointed to the half span arches, and, resting on short columns, form the abutments, thereby reducing the quantity of masonry on which the thrust of the arches is received.

169,674. Toothed Rollers for Coal Breakers or Crackers, Wm. Munson, Scranton, Pa.—The breaking cylinder is cast with sockets which do not extend through the shell, into which the teeth are locked from the outside by means of a block, a wedge, and a screw with square head, which is prevented from turning by a check-piece and a rivet.

169,736. Coke-ovens, Henry Aitken, Falkirk, North Britain.—A natural or forced current of air enters zig-zag tubes in a chamber surrounding the oven, passes thence either into a chamber over the oven, or pipes alongside the oven, and thence through orifices into the oven over the coal. The gases of combustion pass out at the sides into the chambers holding the air-pipes, and thence to the chimney. Safety stoppers are hung alongside the oven. The bottom may be lowered to receive successive charges of coal into the coke just made. Chimney has a side damper.

169,713. Ore-Roasting Furnaces, H. G Livermore, San Francisco, Cal.—Ore passes downward in the longitudinal channels, and beneath the transverse partitions. While heaped up against the latter it is struck by escaping products of combustion reverberated from the abutments of the roof. Vapors from the waste-chamber, and from the smoke and fireflue pass into a rear chamber in communication with the condenser. Ore, previous to insertion, is dried in pan or furnace.

569,747. Gas Machine Retorts, Thos. Kannel, Cincinnati, Ohio.—Oil is vaporized in the inner coil of pipe through the medium of the water heated in the outer surrounding coil. A pipe having a sliding cylindrical sleeve extends from the top of the case centrally to near a dividing-disk, for the purpose of conducting away the products of combustion from the burners.

169,637. Processes of Manufacturing Illuminating and Heating Gas, George W. Harris, Elizabeth, N. J.—This is a process of manufacturing gas for heating and illuminating purposes, by decomposing steam in a highly-heated retort by means of carbonaceous material, conducting the resultant gases into a retort at a high temperature, containing wood undergoing destructive distillation, and combining the water gas with the wood gas in a nascent state, and conducting the gases into a third retort, combining with the same on their way thereto vapor from liquid hydrocarbon, and finally converting the combined gases and vapors in said retort into a permanent gas, substantially as and for the purposes herein described.

Notes.

The Lowe Gas at Utica.—Saturday last, 27th inst., two generators (under Lowe process) produced, for the 24 hours, 176,000 cubic feet of 20-candle gas, showing a product, per stoker, of 88,000 feet.

Good Work at the Edgar Thompson Steel Works.—Product for November, 1875, 26 single turns. Ingots produced, 2671 tons; rails rolled, 8057=2145 44-2240 tons; rails less than 30 ft., 481; under 6 per cent. Week ending Nov. 27th, 116 blows, 1968 rails=521 360-2240 tons; in 6 single turns.

New Electro-motor.—We recently had occasion to mention an electro-motor of Tyrolese origin, the inventor being an ecclesiastic. In its sitting of the 25th of October, the Paris Academy of Sciences heard a paper upon an electro-motor invented by M. CHERFILS, of Havre, designed to replace steam power in most of its applications. Messrs. BRÉGUET and DU MONCEL will report to the Academy on CHERFILS' machine. The expense will be much less than in previous systems, the inventor stating that the maximum cost will be one-fifth of a penny per horse-power of 54 foot-pounds per hour of work.

The Nova Scotia Coal Trade.—Great efforts are now being made by the Nova Scotia coal owners to find markets for the products of their mines, but the trade is so dull that very little success attends their exertions. The shipments from the Pictou mines, last week, dwindled down to 3,240 tons. Some of the Cape Breton mines have done better, the General Mining Association in particular, whose Sydney coal is the favorite for household purposes, having shipped this season nearly one hundred thousand tons. As we stated a week or so ago, nearly all the Cape Breton mines are shutting down and discharging large numbers of men.—Toronto *Monetary Times*.

Monongahela Coal Trade.—The enormity of the coal trade can be estimated, to a certain extent, when it is known that, during a late "rise," 376,928 tons of coal were shipped in forty-eight hours. This is something that cannot be accomplished in another place in the world. This is an honor that belongs alone to Pittsburgh and the Monongahela valley. The above amount of coal would have loaded about forty thousand large freight coal cars, and would make up fully one thousand heavy freight trains. The Monongahela and Ohio rivers are the greatest coal carriers in the world, although transportation of coal is interrupted, part of the year, by ice, and at other times by low water.—Elizabeth (Pa.) *Herald*.

Canadian Protectionists.—A press dispatch dated Toronto, Ont., Nov. 27, 1875, says: "The Ontario Manufacturers' Meeting is closed. Resolutions were adopted affirming that American farm produce should not be admitted free, while Canadian produce is taxed on crossing the border. Stricter customs regulations to prevent fraud, in the way of undervaluation, were demanded, and it was proposed to encourage the production of iron by a duty of $2 per ton on imported pig iron; also, a government bonus, to be continued for ten years, of $2 for every ton produced in Canada from the ore. The next resolution fixes the manufacturers' demand at a twenty per cent. tariff on goods imported from the mother country, goods from any foreign country to be taxed at exactly the figure imposed by such foreign country on Canadian goods of the same kinds.

STATISTICS OF COAL PRODUCTION.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to he bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Nov. 20.

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co	64,075	2,719,131	49,002	2,133,461
D. L. and W. RR. Co	65,096	2,999,024	57,368	2,214,825
Penn. Coal Co	25,805	1,226,048	26,390	1,192,841
L. V. RR. Co	21,757	839,629	18,271	850,294
P. and N. Y. RR. Co	726	84,318	1,428	57,167
C. RR. of N. J	41,918	1,280,406	38,623	1,348,427
Penn. Canal	12,759	289,865	10,043	316,197
Lack. and B. RR.	..	81,493	..	112 529
	232,136	9,519,914	201,125	8,255,741
Lehigh Region.				
L. V. RR. Co	87,031	1,914,968	65 907	2,891,843
C. RR. of N. J	34,750	687,059	28,112	1,066,652
D. H. and W. B. RR.	1,635	75,141	763	37,758
	123,416	2,677,168	94,782	3,996,263
Schuylkill Region.				
P. and R. R. RR. Co	170,210	4,252 672	153.531	4,874,249
Shamokin & Lykens Val.	27,482	1,107,455	12,783	858,342
	197,692	5,360,127	166,314	5,732,591
Sullivan Region.				
Sul. and Erie RR. Co	683	9.714	262	31,653
Total	553,927	17,566,923	462,483	18,016,248
Increase	91,444	..	..	..
Decrease	..	449,325	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Nov. 27, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week, Tons.	Year, Tons.
Cumberland Region, Md.		
Tons of 2,240 lb	49,120	2,154,227
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	8,282	298,873
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	3,921	196,442
*East Broad Top	1,622	44,471
Clearfield Region, Pa.		
*Snow Shoe	1,278	56,258
*Tyrone and Clearfield	20,694	801,694
Allegheny Region, Pa.		
*Pennsylvania RR	2,537	197,390
Pittsburgh Region, Pa.		
*West Penn. RR	5,378	198,479
*Southwest Penn. RR	1,187	22,599
*Penn. & Westmoreland gas coal, Pa. RR.	17,207	639,478
*Pennsylvania RR	8,488	389,120
Kanawha Region, W. Va.		
†Chesapeake and Ohio RR	5 741	166,517

* To Nov. 21. † Nov. 20.

The Production of Coke for the week ending Nov. 21.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	285
Alleghany Region	..	58
West Penn. RR	1,203	45,941
Southwest Penn. RR	8,176	490,390
Penn. & Westmoreland Region, Penn. RR.	693	31,960
Pittsburgh, Penn. RR	2,640	101,273
Total	12,712	669,907

The receipts at Port Richmond for the week were 63,500 tons, shipments 55,500 tons, and balance on hand 163,500 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 62,338 tons.

The Receipts at Perth Amboy for the week were 17,476 tons, shipments 11,087 tons, and balance on hand 46,966 tons.

The Exports of Coal from Baltimore for the week were 000 tons, and for the year, 34,695 tons as compared with 63,366 tons to the corresponding time in 1874.

Receipts of Coal at Boston, for week ending Nov. 19, and years from September 1st, 1874 and 1875.

From	Week. Tons.	Previously. 1875. Tons.	1874. Tons.
Alexandria and Georgetown	1,720	35,411	39,082
Philadelphia	12,146	241,156	194,354
Baltimore	3,700	41,846	52,355
Other places	3,974	100,810	80,806
Great Britain	—	704	1,363
Nova Scotia	180	10,742	12,609

Shipments from Pictou, N. S., for the week ending Nov. 20:

	Tons. Week.	Year.
To United States	1,200	27,430
" West Indies	—	3,971
" South America	—	4,772
" Canada	2,370	140,878
" Other Provinces	1,865	65,719
	5,435	242,770

Belvidere Delaware RR. report:	Week.	Year 1875.	Year 1874.
Receipts of coal at Coal Port (Trenton)	5 549	182,114	261,191
" " " South Amboy	8,794	241,793	576,291
Shipments of Coal Port (Trenton)	7,347	179,271	360,189
" South Amboy	7,953	309,325	580,432

Shipments from Block House, Cow Bay, C. B., to the following destinations, from Oct. 25 to Nov. 5, 1875:

	Week.	Year.
Provinces	321	7,360
West Indies	—	1,393
United States	—	11,039
	321	19,792

The following is a description of the coal shipped:

	Tons.
Round coal	19 527
Slack	250½
Coke	14½

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Dec. 3, 1875.

Anthracite.

There has been quite a falling off in the demand for anthracite coal, although chestnut size is still in very good request with most of the companies. The large companies claim to be firm in their prices, but there is nevertheless as much coal offering at concessions (to the extent of at least 50c. per ton on some sizes) as the market requires. Considerable coal consigned to ports that have been closed by ice during the week, is, or will be, offered for re-sale. The inaccessibility of points on canals and rivers will prevent the delivery of considerable coal already contracted for. Many dealers and consumers, however, who are accustomed to depend on water transportation are so situated as to be able to meet any pressing requirements by rail shipments, although, perhaps, at an additional cost. This early closing of navigation will tend to distribute a portion of business, that would have been consummated during the month, through the whole winter. The fiscal year of the Philadelphia and Reading, and Lehigh Valley Railroad Companies closed with November 30. The latter company has failed to send its regular weekly report, so that we are compelled to omit our usual statistical statement. From reports received, however, it is apparent that a very large quantity of coal is being mined, and so far there have been no resolutions passed by the Combination relative to a curtailment of production. As the companies are all desirous of making as good a showing as possible in their annual reports, those that did not conclude their reports with November, will probably try to sustain shipments until January 1st. The Delaware, Lackawanna and Western Railroad Company, and the Delaware and Hudson Canal Company will show a largely increased and very satisfactory business; the Pennsylvania Coal Company will show a slightly increased business; while the remaining companies will show prominent losses of trade, with balance sheets not so satisfactory as in 1874.

Bituminous.

There is a fair amount of bituminous coal being shipped. The out-put for the week ending November 27 was considerably more than for the corresponding week of 1874. The shipments by the Chesapeake and Ohio Canal, however, will probably cease with this week, which will very much reduce the Cumberland trade. Several of the companies have already stopped shipping by this route, and those that are now doing so are compelled to pay advanced rates of freight. The leading item of interest during the week was the closing of a contract with the Pacific Mail Steamship Company for a year's supply (estimated at 60,000 tons) of Clearfield coal. The price is kept private, but is supposed to be very low. If the figure that rumor gives be correct, the Cumberland interest will have to introduce large economies, if it would hold its own in the steamer trade.

Proposed Reduction of Wages.—It is said that several of the Cumberland companies will give notice of a reduction of wages soon. It is not given out what the reduction will be, but it is supposed that for cutting coal it will be 15c. per ton, making the price 50c. per ton, or the same as is paid in the Clearfield Region, and that day wages will be reduced in proportion. The Cumberland companies have found those of the Clearfield Region very strong competitors, and have yielded a large share of trade to them during the past two years. This movement for a reduction in cost is a necessity that not only *some* but *all* of the companies will have to realize, and the signs of the times indicate that this Winter will be the most appropriate time for making it. A share of the reduction should come from the transportation companies, but the mining companies must help themselves also wherever possible.

Freights.

Freights are higher from Georgetown; lower from Philadelphia, and nominally unchanged from Baltimore and this port.

Philadelphia Coal Trade.

PHILADELPHIA, Dec. 2, 1875.

Notwithstanding the accumulation of coal at this point, the Reading continues for a few days longer to receive the coal from the pool with the view to assist the operators who have supplied them with coal, and to keep them going until some course of action for the Winter is determined upon. A commi tee has been appointed by the operators, and will, it is expected, report next week. Opinions are much divided. Those who cannot run, want, of course, an entire stoppage. The company with their big stocks on hand is believed to favor that plan. Those whocan run steady desire no total stoppage, and those who believe they can run part of the time, want a partial stoppage—say ten days to four weeks every month until March. It is not likely that the complete stoppage programme can be carried out. It would be suicidal for the Schuylkill region—though that is not a good reason for their not adopting it—but that region has already lost so much trade by blundering in every possible way, that they will not rush so readily hereafter into more of it. Other regions are not likely to stop, and would benefit by a stoppage of the Schuylkill, and it is believed that some Schuylkill operators will decline to join in a prolonged stoppage. A stoppage of part of each month, or curtailment of the days' work, is more likely to be the final result, if anything can be accomplished by concerted action. When one sees how unfaithfully the Schuylkill operators have carried out their solemn pledges about prices, he cannot have much confidence in anything they are likely to agree to do.

Vessels have been very plenty, and orders very scarce, and, as a natural consequence, freights, in spite of the assurance that Winter is on hand, have dropped to $2 and $1 90, to Boston.

Wholesale Prices of Anthracite Coal for Dec. f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
¶Pittston at Newburgh	5 05	5 15	5 25	5 65	6 10	4 95
Wilkesbarre at Port Johnston	5 05	5 15	5 25	5 65	6 10	4 95
Plymouth, R. A., *Net*	....	....	5 25	5 65	6 10	4 95
Susque. Coal Co. at Amboy W.A.	5 05	5 15	5 25	5 65	6 10	4 95
Kingston at Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 55	5 65	6 10	5 10
Old Company's Room Run "	5 55	....	5 55	5 65	6 10	5 10
§Sugar Loaf, Hobok. & Amb."	5 55	....	5 55	5 65	6 10	5 10
Lehigh Coal Exchange "	5 55	....	5 55	5 65	6 10	5 10
Honey Brook Lehigh	5 55	....	5 55	5 65	6 10	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 55	5 65	6 10	5 10
†**Schuylkill Coals at Port Richmond.**						
Schuylkill white ash	4 55	4 65	4 75	5 15	5 60	4 45
Schuylkill red ash	....	....	5 05	5 25	5 65	4 45
Shamokin white and red ash	....	....	....	5 40	5 80	4 50
Lorberry	....	....	5 90	5 90	5 90	4 65
Lykens Valley	....	....	6 50	6 50	6 50	5 50

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to N. York.	45c.
" " South Amboy to New York	50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton, the expense of towing vessels from New York harbor to Rondout and back will be borne by the Company.

†Freight from Port Richmond to New York (free of discharging) 85c. per ten.

‡Prices to the Trade.

§By Canal at New York, Jersey City and Brooklyn, 30c additional alongside.

Schuylkill coal is delivered f.o.b. of boats in New York harbor at 50c. per ton additional to these rates.

¶These rates are nominal.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	5 00	6 50
Despard, West Va.,	5 00	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	32/ 6d	13@14
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S.	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	5 25@5 5

Cumberland, at Baltimore	4 25@4 35	5 75@6 00
Clearfield and Allegheny, "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, 90; at Greenwich, Phil.	4 25	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd	7 00	7 50	6 50
Schuylkill Red Ash, del'd	7 00	7 50	

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

Williamsburgh, N. Y.

Lackawanna Coal at Yard.

Stove	$6 40
Egg	5 90
Chestnut	5 40

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	25 00
American " " " "	16 00
American Orrel " " "	11 00
Red Bank Cannel " " "	14 00
Cumberland " " "	7 00

Baltimore, Md. Nov. 30, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 55	5 40
Egg	5 92	5 77
Stove	6 17	6 02
Nut	4 97	5 10
Shamokin, (red or white ash), and "Boston," freeburning white ash,		
Egg	5 95	5 79
Stove	6 15	5 99
Lykens Valley, red ash,		
All sizes	6 55	6 37

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 15	4 50
West Virginia f. o. b. at Locust Point		5 50
Youghiogheny Gas, f. o. b. at Locust Point		5 50
Swanton Coal, George's Creek		4 40

Boston. Nov. 30, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	9 00	Anthracite	6 50@ 7 25
Glace Bay	5 00	" retail	7 50@ 8 00
Sydney	6 25		

Buffalo, N. Y. Nov. 30, 1675.

Reported by our Special Correspondent.

ANTHRACITE.

	Afloat. f.o.b.	Retail, Deliv'd.
Grate	$6 40	$7 40
Egg	6 40	7 40
Stove	6 85	7 85
Nut	6 60	7 60

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co.	3 50	3 25	....	2 30	....
Cameron	....	3 25	....	....	....

Chicago, Ill. Nov. 30, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.
Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices of coal. Trade is slack—lighter than usual for this season of the year. Stocks abundant, and prices not very firm.

Lehigh Lump	$10 50	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 50	Walnut Hill, Pa.	@ 6 50
Lehigh stove and chest.	11 00	Midway, Pa.	@ 6 50
Lackawanna, Wilkes Barre and Pittston*		Cannel	@ 8 00
		Blossburg	7 50
Grate and egg	9 50	Indiana Block	6 00
Stove and chestnut	10 00	Hocking "Brooke"	6 50
		Wilmington and Illinois	5 00

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Cincinnati, O. Nov. 30, 1875.

Reported by our Special Correspondents.

	Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat		10 c.	——
Pomeroy coal		8 c.	——
Kanawha "		10 c.	——
Cannel coal, according to quality		—	——
Semi-Cannel		—	——

The following are the retail prices delivered

Youghiogheny	15@16c. $4 00
Pomeroy	11c. 3 00
Cannel	—c. ....
Kanawha Semi-Cannel	13c. 3 60
Anthracite	9 5c@10 50
Foundry coke	10c. ——
Coke, hard and soft	1cc. ....

Cleveland, O. Nov. 30, 1875.

Specially reported by Messrs. WARNER, BATES & CO.

WHOLESALE.

Per ton of 2000 lb. f. o. b. vessels.

	For vessels,	On cars.
Youghiogheny Gas Coal	$4 40	$4 15
Cannel	4 50	4 15
Blossburgh	5 00	5 00
Briar Hill Block Coal	3 80	3 60
Hocking Valley	3 25	3 10
Straitsville Coal Co., lower vein	3 25	3 10
Massillon	3 10	3 30
Tuscarawas Valley	2 85	2 70
Columbiana	2 80	2 60

RETAIL DELIVERED.

	Lump.	Nut.
Briar Hill	$5 00	$3 50
Massillon	4 50	4 00
Mineral Ridge	4 50	4 00
Columbiana	3 25	3 00
Straitsville Coal Co., lower vein	4 00	3 00
Tuscarawas Valley	3 25	3 00

ANTHRACITE DELIVERED.

	Grate.	Egg.	Stove.	Chestnut.
Lehigh	$9 00	$9 00	$9 50	$9 25
Wilkes-Farre	8 10	8 10	8 50	8 25
Lackawanna	8 10	8 10	8 50	8 25

Detroit, Mich. Nov. 30, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep.sizes.	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	8c
		Massillon	7 00

Erie, Pa. Nov. 27, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb.		Bituminous f. o. b.	
Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Nov. 29, 1875.

Specially reported by Messrs. COBB & BRANHAM

We quote coal in our market as follows:

Wholesale on board cars, and retail delivered to consumers.
Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

IndianCreek, per ton	$2 75	Peytona cannel, per ton.	7 00
White River, "	2 75	Indiana Cannel	6 50
Brazil Block, "	2 90	Hocking Valley	4 25
Highland, grate, "	2 50	Youghiogheny	4 75
Block coal, nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack	17 00	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$8 70	Nut	8 75
Egg	8 70	Stove	9 00

Lehigh Anthracite.

Broken	10 35	Nut	10 35
Egg	10 35	Stove	10 60

Retail, per bushel, delivered.

Sand Creek	16c.	Block Nut, steam	9
White River	14	" Slack, "	8
Brazil Block	15	Peytona Cannel	28
Highland grate	13	Virginia "	27
Block Nut, domestic use	12	Youghiogheny	22
Highland Nut, " "	12	Blossburg	26
" " steam	9	Piedmont	26

GAS COKE (measured.)

Crushed	15c.	Lump	12c.

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes)	$9 75 per ton.
Lehigh, retail	$11 50 per ton.

Louisville, Ky. Nov. 27, 1875.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

	per bushel		per bushel
Pittsburgh	10c	Pine Hill	—
Raymond City	9c.	Kentucky	—

RETAIL.

	per bushel		per bushel
Pittsburgh	14c.	Peytona Cannel	20@22c.
Raymond City	13c.	Buckeye "	—
Pine Hill	13c.	City-made Coke	11c.
Kentucky	12c.	Anth., per ton, $10 00 to 10 50	
Screened Pittsburgh per load		$3 00	
Screened Raymond City		2 75	
Pine Hill (Kentucky)		2 75	
Cannel		$5 to 5 50	

Milwaukee, Wis. Nov. 27, 1875.

Specially reported by Messrs. R. P. ELMORE & CO.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 00
Lehigh Prepared	11 00	Blossburgh	8 00
Lackawanna (all sizes)	10 00	Cannel	8 00
Pittston	10 00	Pittsburgh	7 00
Scranton	10 00	Steam coal	5 00

New Orleans, La. Nov. 27, 1875.

Specially reported by Messrs. P. & R. DE VERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite, Cannel and other Coals.

Pittsburgh coal, retail, per bbl	60c.
" wholesale	35c.
" steamboats, per box	50c.
" to manufacturers, per bbl	55c.
" shipments, per hhd	$6 00
Anthracite, wholesale, per ton	9 50
" retail, "	12 50
Virginia Cannel, per bbl	80c.
Scotch " "	....
Mt. Carbon, wholesale, per bbl	....
" " retail, "	....
St. Bernard, wholesale, per bbl	....
" " retail, "	....

Richmond, Va. Nov. 26, 1875.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous,	$4 50
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 75	James River Bitum	3 30
Lewiston "	4 75	" " Carbonite,	5 80
Kanawha Gas coal	4 50		

San Francisco.

From the *Commercial Herald*, Nov. 18, 1875.

Imports from January 1st to Nov. 16:

Anthracite tons	11,571	English, tons	53,582
Australian, tons	121,601	Vancouver Island, tons	51,617
Coos Bay, tons	20,217	Rocky Mountain, tons	53
Cumberland, tons	8,530	Seattle, tons	55,761
Mt. Diablo, tons (8 mos)	121,059	Bellingham Bay, tons	9,545

The market is still sluggish for all bituminous; late cargo sales of Liverpool were made at $8 50, and the same rate is asked for Sydney; buyers for cash (prompt pay), are not plentiful just now. The *Friedlander*, from New York, brought 310 tons coal, and the *Dauntless*, from the same place, 251 tons Lehigh on trade orders. It is a very hard matter to quote the market at present for spot cargoes. Trade is dull and prices nominal, by reason of an over-supply. Wallsend cargoes may now be quoted at $8 50@9; Sydney, $8 25@8 50@9; Cumberland in bulk, $14@15; in casks, $16@18; Bellingham Bay, at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively; English and Scotch Steam $9@10; Nanaimo, $9 50@10; Seattle, $9 25@10; Anthracite, $15@18. Imports for the week embrace the following: per *Ellen Goodspeed*, from Newcastle, England, 1,100 tons coal, and 100 tons coke; *Lizzie Williams*, from Seattle, 1,300 tons; *Prince Umberto*, from Newcastle, N. S. W., 1,723 tons; *Bowden*, same place, 2,320 tons, etc. Supplies of Coos Bay are moderate for the season.

Toledo, Ohio. Nov. 30, 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 00
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 00@7 50
" nut	2 90	Cumberland	7 00@7 50
Briar Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 50	Stove, screened	$7 75
Egg, "	7 50	Chestnut "	7 50
Lehigh Lump	9 00		

40 cents to $1 per ton additional for delivery at retail.

Toronto, Ont. Nov. 27, 1875.

The following are present retail prices for coal:

Per ton all sizes.

Lackawanna and Scranton	$7 00
Lehigh Lump and prepared	8 00
Blossburgh	6 50
Soft lump for grates	6 00
Soft nut	4 50

Halifax, N. S. Nov. 27, 1875.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 35
Gowrie	3 35	Blockhouse	3 35
Victoria	—	Albion (at Railroad)	4 00

Montreal. Nov. 27, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & CO.

Wholesale per ton of 2240 lb.

Scotch Steam	$6 00	Cape Breton Steam	$5 25
Pictou "	5 75	Newcastle Smiths,	7 00

Anthracite at retail, per 2000 lb., delivered.

Egg	$8 50	Chestnut	8 25
Stove	9 00		

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 60	2 46	2 93	2 93	3 16
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	47	71
‡ Philipsburg, N. J.	99	85	1 32	1 32	1 65
Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 24	2 10	2 59	2 57	2 80
High Bridge, N. J.	2 40	1 95	2 80	2 54	2 72
Somerville and Raritan, N. J.	2 80	2 35	3 20	2 35	3 12
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 60	2 46	2 95	2 93	3 16
¶ Jersey City, N. J., and New York, via L. V. RR. and Morris Canal.	2 85	2 40	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
Trenton ,Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From *Mauch Chunk* to *New York* (towing limits) and ersey City† via Lehigh Valley RR. and Morris Canal... $2 37
From *Mauch Chunk* to *Philadelphia* via L. V. RR. and North Penn. RR 1 75
††From *Phillipsburg, N. J.* to *Hoboken* for shipment via Delaware Lackawanna and Western RR., Morris and Essex Division 1 24
From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R R. in connection with Pa. and N. Y. R.R. 2 53
From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte* 2 59
From *Lackawanna Junction* to *Sterling* for *Oswego, N. Y.*.. 2 02
‖ To this point for all places between Rochester and Buffalo the rate is 2 53
* The rate to this point for Syracuse is 2 08
** Rates on line coal from Hazleton are 10c. per ton above these figures.
‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance.
Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.
§ Twenty cents per ton less when five cars at a time to one

party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re-shipment from this point is 20c. less than above rate.

†† The rate for consumption to this point is $1 80.

Schuylkill Coals. per ton of 2240 lb.	Pine Grove	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.
To *Port Richmond*, for shipment, via P. & R. R. R., Main Line	2 12	2 07	2 00	1 99	1 92
Philadelphia, Retail yards	2 22	2 17	2 10	2 09	2 02
Harrisburg, via Lebanon Valley Branch	1 35	2 02	1 95	1 94	1 87
Allentown, via East Pennsylvania Branch	1 70	1 65	1 58	1 57	1 50
Lancaster, and Points on Lancaster Branch, via R. & C. R.R.	1 82	1 77	1 70	1 69	1 62
Dauphin, via Schuylkill and Susquehanna Branch	85	....	1 43	1 42	1 35
Slatedale Junction via Berks and Lehigh Branch	1 88	1 83	1 76	1 75	1 68
Lebanon, via Lebanon and Tremont Branch	96	....	....	....	....

From *Tamanend* to *Catawissa*, via Catawissa and Williamsport Branch Railroad 94

From *Tamanend* to *Williamsport*, via Catawissa and Williamsport Branch Railroad 1 39

* From *Port Clinton* to *Philadelphia* via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading)... 1 69

* From *Port Clinton* to *New York*, within towing limits, " 53d street 2 71

For shipment via Main Road or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional, to Port Carbon, Mount Carbon, Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

Coal sent to points on the Catawissa and Williamsport Branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

The rates of freight and tolls on lump and steamboat coal (except that sent to Richmond for shipment) will be twenty per cent., and on broken coal will be ten per cent. less than the above rates.

* The charge from Schuylkill Haven to Philadelphia or New York is 11c. additional to these rates.

On and after July 15th, the Drawback of ten cents per ton now paid on shipments of Anthracite Coal from Schuylkill Haven and Port Clinton, that have passed Fairmount Locks to Philadelphia and vicinity, will be discontinued.

CANAL TOLLS, exclusive of tonnage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal ..... 3½c.
Bituminous and Semi-bituminous Coal.. 3½c.

Freight on Nova Scotia Coals.

Pictou, Nova Scotia,	to	New York	$1 80
" " "		Portland, Me	2 00
" " "		Montreal, Canada	2 35
" " "		Quebec, "	1 80
" " "		Halifax, N. S.	1 25
Cow Bay, "	"	New York	2 00
Glace "	"	" "	1 75
Cow Bay, "	"	St. Jago ..... gold,	3 75@4 00
Pictou, "	"	Cardenas "	3 75
Cape Breton, "		Barbadoes "	4 00

Pilotage for vessels of from 80 to 150 tons, $6 inward and $4 outward. From 150 to 1000 tons, 1c. to $17 inward and $6 to $12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1¼c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c per ton. Two hatch vessels 7c. per ton.

Freights on Bituminous Coals from the Mines to Tide-Water Shipping Ports.

From the Mines to Cumberland and State Line (say an average of 20 miles) the charge is 3 cents per ton of 2240 lb. per mile.

From State Line to Amboy (346 miles) $3 75 per ton of 2000 lb. On coal shipped beyond this point there is a drawback of 50 cents per net ton.

From Cumberland to Baltimore (178 miles) $2 31 per ton of 2240 lb., or $2 02 per net ton, and 4 cents per gross ton for use of cars.

From Cumberland to Georgetown (152 miles) by canal, $1 15. Tolls, 51 cents.

From the Mines to Piedmont (from 4 to 10 miles) 5 cents per ton of 2240 lb. per mile on distances less than 5 miles, and 4 cents per ton per mile on distances not over 10 miles.

From Piedmont to Baltimore (206 miles) $2 69 per ton of 2240 lb., or $2 40 per net ton.

From any point in the Kanawha Valley to the James River wharves below Richmond, (say 350 miles) by C. and O. R.R., including terminal charges, per ton of 2240 lb. For Cannel coal, $4 50.

Do do., for Semi-Cannel or Splint, per ton of 2240 lb., subject to rebate on shipments of 5000 tons or more, $3 65.

From Irwin to W. Phila (say 332 miles) per P. R R. Penn. Westmoreland gas coal, per ton 2000 lb $4 75

From Osceola to W. Phila (say 248 miles) per T. & C. R. R., per ton bituminous coal of 2000 lb., 6c. extra for cross roads Drawbacks, according to destination of coal 3 55

From Fairmount and Clarksburg to Baltimore (say 300 miles) via B. & O. R. R. including loading, per 2000 lb 4 75

On through coal after deducting drawback ....

From Richmond, Va., to New York, via vessel, 392 miles per 2240 lb.. 1 60

" " " *Boston*, about 650 " " " " 2 00

" " " *Philadelphia* 292 " " " " 1 25

From the Mines to Richmond, via James River and Kanawha Canal, 15 miles 15

Freights.

Per ton of 2240 lb.

Representing the latest actual charters up to Dec. 2, 1875.

PORTS.	From Philadelphia.	From Baltimore.	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.¶
Augusta, Me	....	2 40	....	....
Albany	*85	1 70	....	....
Amesbury, Mass	....	....	....	....
Bangor, Me	†2 00	3 00	....	1 75
Bath, Me	1 60	2 50	2 50	1 30
Baltimore	....	....	....	....
Boston, Mass	§2 00	2 20	2 50	1 60
Bridgeport, Ct	*85	1 65	1 85	90
Bristol, R. I.	....	....	1 90	90
Cambridgeport, Mass.	§1 90	....	2 00	1 60
Derby	.. ..	1 65	....	....
Dighton	....	1 70	....	....
East Cambridge	1 90§	....	1 90	§1 55
Fall River	1 50	1 65	....	90
Hackensack	....	....	....	....
Hallowell, Me	....	....	....	....
Hartford	....	2 50	....	1 40
Hoboken	†85	1 40	1 60	40
Hudson	....	1 65	....	....
Jersey City	....	1 40	1 60	40
Lynn, Mass	†2 10	....	....	†1 60
Middletown	....	....	....	1 15
Mystic	....	....	....	....
Newark	....	....	....	....
New Bedford	1 10	1 80	1 95	90
Newburyport	2 10	2 40	2 60	1 75
New Haven	*85	1 65	1 85	90
New London	1 50	1 65	1 85	95
Newport	1 50	1 65	1 85	90
New York	85††	‖1 50	1 85	40
Norfolk, Va	85	60	60	....
Norwalk	85‡	1 50	1 85	80
Norwich	1 50‡	1 65	....	90
Pawtucket	1 75‡	1 65	2 00	‡100
Philadelphia	....	80	....	....
Portland	1 95	2 25	2 50	1 60
Portsmouth, N. H.	2 05@2 10	2 35	2 60	1 75
Providence	1 50	1 65	1 90	90
Petersburg, Va	....	90	....	....
Portsmouth, Va	....	....	....	....
Poughkeepsie, N. Y.	....	1 50	....	....
Richmond, Va	1 00	70	....	....
Rockport	....	....	....	....
Saco	2 50	....	....	....
Sag Harbor	....	....	....	1 00
Salem, Mass	2 00	2 30	2 60	1 30
Salisbury Pt., Mass	....	....	....	1 50
Savannah, Ga	....	1 50	....	....
Stamford	*85	....	....	90
Stonington	....	....	....	....
Taunton	.. .	..	....	1 30
Trenton, N. J	....	....	....	....
Troy	....	....	....	....
Warren, R. I	....	....	....	90
Washington, D. C	1 00	....	....	....
Wareham	....	1 75	1 95	....
Weymouth	2 00	2 25	2 60	....
Wilmington, Del	....	85	....	....
Wilmington, N. C.	....	1 50	....	....

* And discharging and towing. † And discharging.

‡ And towing. § 30c. per bridge extra.

‖ The rate to this point by barge is $1 70. †† Afloat.

From Philadelphia to all places on the Hudson River the rate is 85c, and discharging and towage according to destination.

¶ These rates are very irregular and our quotations may be considered nominal.

The Welsh Coal Trade.

FROM MESSRS. TELLEFSEN, WILLS & CO.'S CIRCULAR FOR THE MONTH ENDING 15th NOVEMBER, 1875.

The state of trade is, perhaps, best shown by the action of the POWELL DUFFRYN Company in closing some of their collieries. The collieries of this district cannot, with the present demand, be kept at work, on an average, more than four days a week; while prices are already so low that there has been very little change, in this respect, during the past month. In the latter part of 1874, the ironmasters stated that, with the reduction they then asked for, they might be able to keep their works going, though at no profit. Even this appears, now, to have been too sanguine a view. The men failed to recognize that a depression in the iron trade, which they admitted existed to a certain extent, had anything to do with the coal trade, and this in face of the material reductions in prices which had already taken place. They would not see that if the ironmasters stopped their iron-making, and sent their coal into the market, the effect on the coal trade must be disastrous; yet, this is exactly what has taken place. The consequence is, the major portion of the coal now shipped, in Cardiff, is sold much below the cost of production, so that a number of collieries must be shortly shut up, or there must be a considerable reduction in the wages of the colliers; and, under any circumstances, it is to be feared that there will be intense suffering, among those occupied in raising coal, if we get anything like a severe winter. The cost of raising coal has increased nearly fifty per cent., during the last four years, so that prices which would have formerly left a remunerative profit, now mean a severe loss to colliery proprietors; and we regret we can see no immediate prospect of a better state of things. Quotations are as follows: Wills' Merthyr best steam coal, f. o. b. Cardiff, colliery screened 11/ 3d. and double screened 12/; Rhondda resolven steam coal, colliery screened 10/ 6d. and double screened 11/; house coals 9/ 6d.; and coke 16/.

Robert Cooks & Co.'s Metal Report.

LIVERPOOL, November 18, 1875.

TIN PLATES.—There are very few changes to note, and those downwards. With the depressing character of United States reports, and the failure of one of our manufacturers, it is somewhat remarkable that makers will not accept lower bids; but they seem to have for the present made up their minds to do no business rather than name lower figures.

PIG IRON.—Since our last there has been a variable business done in warrants, at prices ranging from 60/ 3d. to 60/ 9d., the market yesterday closing with buyers at 60/ 3d., and sellers 60/ 6d. There is little alteration to report in makers' iron; prices are high compared with warrants, and, consequently, deliveries are again taking place ex-store. We quote No. 1 Gartsherrie, 73/; Coltness, 77/ 6d.; Summerlee, 70/; Monkland, 62/ 6d., f.o.b. Glasgow; Glengarnock, 69/; Eglinton, 63/, f.o.b. Ardrossan. Shipments for week ending 13th inst., 10,663 tons. Stocks against warrants on 12th inst., 69,213 tons.

FINISHED IRON.—The coal question in Staffordshire has given a temporary firmness to the trade, but this only applies locally. Elsewhere things are very depressed. The Scotch makers have reduced the price of bars to £7 10/ per ton, nett. English crown bars, of good quality, £7 15/ to £8. Hoops are in request at £9 10/, and sheets are also in demand.

TIN has been in considerable demand during the past week, and closes steady with indifferent sellers at English—L. and F. ingots, £88; bars, £89; grain bars in barrels, £93; granulated, £95 per ton. Straits is dearer, at £85, when terms are considered.

COPPER.—No change; prices as before. Tough ingots, £89; best selected, £90 to £91; sheets, £96 to £97 per ton.

LEAD remains in same position, few buyers thinking that bottom has been touched. The harder grades and plumbers' pig are scarce. Quotations are:—Soft English pig, £22; sheet, £23 10/; water pipe, £24; gas pipe, £24 10/.

FREIGHTS.

New York.	Boston.	Baltimore.	Philadelphia.
12/ 6d.	10/	12/ 6d.	15/
Montreal.	Quebec.	Toronto.	Hamilton.
32/ 6d.	37/ 6d.	27/ 6d.	27/ 6d.

SCOTCH PIG IRON MARKET.

GLASGOW, November 16 1875.

There has been a good steady business done in Warrants during the past week the price ranging from 60/ to 60/6 cash, and 60/3 to 60/9 one month.

To-day business was done from 60/3 to 60/6 cash, and 60/6 to 60/9 one month, closing with buyers at the lower, and sellers at the higher prices.

There is little alteration to report in the value of shipping iron; prices are high as compared with Warrants, and consequently deliveries *ex* store are again taking place.

G. m. b.	at Glasgow (deliverable alongside)..	62/ 60/6
Gartsherrie,	" "	..73/ 65/
Coltness,	" "	..77/6 66/
Summerlee,	" "	..70/ 62/6

We are, yours faithfully,
WILLIAM COLVIN & CO.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Dec. 3, 1875.

American Pig.—The demand for this article shows no particular change, but prices do. During the week the Allentown Iron Company sold 500 tons of No. 1 foundry at $23, and to-day the Thomas Iron Company sold 1000 tons at the same figure, and announces this as its open quotation. Earlier in the week the latter company sold 500 tons of No. 2 foundry at $22. They have not established prices for No. 2 foundry and forge, but we suppose that they will bear the usual relation to No. 1 foundry. We are also reported 100 tons of Port Orem iron at a private price, and sundry small lots at our quotations. The action of the Thomas Iron Company was necessitated to preserve its trade. The same course has been pursued throughout the year; other companies have, from time to time, offered concessions to customers which the Thomas Company have held for years, and to retain its trade, and not do injustice to its other customers, it has been compelled to take the initiative in openly reducing quotations. Some companies are still quoting on the basis of $24 for No. 1, but there is enough iron offering at $23 to establish that as the market price. During the latter part of December, 1874, there were considerable sales of iron made, but there is nothing to indicate that there will be any important movement this year. It is quite probable that those who bought in December last year will delay purchases until after the accounts of the companies are made up, and it is known whether the production of iron will be increased or decreased. The stocks on hand now, with the prospects of a fair production in the future, will certainly warrant buyers in taking this position, so that we are not likely to see the decline, that has been going on for months, fully checked before the first of February.

Some of our iron-men express a desire to see the Govern-

ment offer assistance to the Texas Pacific scheme, while at the same time they acknowledge that it would be an injustice to the general public. Considerable iron would be required to lay and equip this road, but as its purchases would be distributed over a number of years it would produce but little, if any, improvement in the position of the iron-trade, which has still to look to improvements in manufacture and internal economies to enable it to find a wider home market and foreign outlet. We quote No. 1 foundry at $23@24; No. 2 foundry $21@22 and forge at $19@21.

Scotch Pig.—The demand for this article continues light. We note sales from ship of 200 tons, various brands, on private terms, and quote as follows: Coltness $33; Glengarnock, $31 50@$32; Eglington, $29 50@$30.

Rails.—We note a sale of 4,020 tons of 56 lb. rails to the Little Rock and Fort Smith Railroad, by the Chattanooga mill, at a price said to be very low. We continue to quote as follows: Iron rails at mills, $44@47, and steel at $65@70.

Old Rails.—We learn of no further transactions, in the absence of which we quote at $25.

Scrap.—We are reported a sale of 100 tons at $31 50, and quote at $30@31 50.

Philadelphia, Pa.

Weekly report of the Philadelphia Iron Market, furnished by Messrs. JUSTICE COX & CO., Iron Merchants, 333 Walnut street, Philadelphia. Week ending Dec. 2, 1875.

The week closes with a firmer feeling than has been shown for some time. In fact, the producers are all resolved, with one accord, that prices shall go no lower. If any change should occur it will be an advance of at least a dollar a ton, and, with the lessend stocks on hand, the few furnaces likely to blow in at this season of the year, the price is likely to advance. We have no large sales to report, but a steady increasing demand from foundrys and mills in this neighborhood. A mill-owner in this city reports the orders at his mill at just double in November over October. Whilst prices are no higher the demand is much better, a sure forerunner of higher prices. We quote No. 1, $24; No. 2, $22; gray forge, $21@$22. We report sales of 500 tons Chickies, $22 50; 200 tons St. Charles, $22 50; 100 tons Crane, $22; 500 tons Montgomery, $21 50; 500 tons 1 and 2 in small lots of 10 to 50 tons at quotations.

Bars are quoted and sold as wanted at 2.5-10.

Scrap in demand at low prices. We quote $28@$32.

New Rails.—Some orders have been placed the last week at 45 to 47 at mill.

Old Rails are quoted $25@$26. No sales.

Baltimore. Dec. 1, 1875.

Specially reported by Messrs. R. C. HOFFMAN & Co.

The iron market shows no change, and transactions continue light, notwithstanding the near approach of close of navigation. We quote prices as follows:

Baltimore Charcoal	$32@35	Anthracite No. 3	$21@22
Virginia Charcoal	30@34	Mottled and White	18@20
Anthracite No. 1	25@26	Charcoal C. B. Blooms,	70@75
" No. 2	23@24	Refined Blooms	60@65

Boston. Dec. 2, 1875

From our Special Correspondents.

We cannot report any decided change in the iron trade, small parcels of good brands of pig iron are selling at $25 to $28 per ton, other ordinary irons are sold a shade less. The foundry men are short of work, and are not disposed to purchase, except for immediate wants. Bar and scrap are also in moderate request as a rule, however, the trade is quiet.

PIG is moving this week in odd small lots, a very trivial business, but at somewhat irregular prices. The inquiry is fair, but there is a want of confidence that values have settled to a steady point, hence buyers piece out their wants in the most economical manner. We quote No. 1, $24@26; No. 2, $22@24; gray forge, $19@$21, nominally.

BAR is selling in a jobbing way in an erratic manner. While many of the dealers are idle, a few seem to be putting out goodly quantities. The sales are chiefly in small sizes for sleighs and blacksmithing purposes. Prices are not improved, quotations ranging from $55@$57 on refined and $51@53 for common.

STEEL is selling rather better than a week ago, and business turns in almost all styles, grades, and qualities. We quote American tool, 14@15c.; American machinery, 9@9½c.; Bessemer tires, 6½@7¼c.; Sweet's Excels or tire, 8½@12c.; English tool, 16@18c., gold.

COPPER has again been turned upward by the strength of the Combination, and closes the week quoting steady at 23¾ to 23¼c. for spots and futures. The business is small.

For manufacturers we quote: new sheathing, 30c.; bolts and braziers, 31c.; yellow metal bolts, 28@29c.

LEAD here has felt the impulses of the Western markets and quotes with a small business at an advance of ¼c. We quote pig 5¼c. for domestic and 6¾@6½c. for foreign; sheet and pipe lead, 9c., currency; tin-lined pipe, 10½c.; bar lead, 9c., less usual trade or 10 per cent. discount.

ANTIMONY is firm, with a better inquiry at 13½c.

SPELTER is strong and quiet at $7 45, 30 days, and $7.35, prompt cash, all currency. Silesian is dull at $7.30.

TIN, from the advices from Singapore of a civil commotion, has advanced in London sixpence, but on this side the market stands simply strong and unchanged. We quote Straits 19¼c.; Banca, 24c.; Refined English, 19¾@20c., gold. Plates are active; we quote Charcoal I. C. $7 25@7 75; Coke, $6 50@6 75; and Terne at $6 15@6 50, gold.—*Commercial Bulletin.*

Cincinnati. Nov 30, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

We have no change to report in our pig iron market.

Louisville. Nov. 27, 1875.

Specially reported by Messrs GEORGE H. HULL & Co.

The market continues dull, the sales being confined to iron for immediate use. Prices are unchanged. The usual time, four mos., is allowed on the quotations:

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores	$25 00@26 00
No. 2 " " "	23 00@24 00
No. 1, Mill, from " " "	—@—
No. 1, foundry, from Alabama, Georgia and Tennessee ores	23 00@24 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores	22 00@23 00
No. 1, Mill, from " " " " "	21 00@22 00

HOT BLAST—STONE COAL AND COKE.

No. 1, foundry, from Hanging Rock ores	23 00@24 00
No. 2, " " " " "	22 00@23 00
No. 1, Mill, " " " " "	21 00@22 00
No. 1, foundry, from Ala. Ca. and Tenn. ores	23 00@24 00
No. 2, " " " " "	22 00@23 00
No. 1, Mill, " " " " "	21 00@22 00
No. 1 foundry, from Missouri ores	24 00@25 00
No. 2 foundry, from Missouri ores	24 00@25 00
No. 1 Mill, from Missouri ores	25 00@26 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	35 00@40 00
" " Tennessee "	28 00@30 00
" " Alabama and Georgia ores	28 00@38 00
" " Kentucky ores	28 00@40 00

Pittsburgh. Dec. 1, 1875.

Specially reported by A. H. CHILDS, Esq.

The pig iron market remains inactive, and prices have undergone no material change.

Holders have not lost faith in their long cherished theory that the demand will soon increase and that, owing to the limited supply, prices will show some improvement. In the meantime quotations remain as before.

No 1. foundry	$25 00@26 00—4 mos
" 2. "	24 00@24 50—4 mos
Gray forge	22 50@24 00—4 mos
White and mottled	20 00@22 00—4 mos
Hot blast charcoal	25 00@30 00—4 mos
Cold blast charcoal	30 00@35 00—4 mos

Richmond, Va. Nov. 30, 1875.

Reported by ASA SNYDER, Esq.

Sales of charcoal irons, since my last report, have been over 200 tons. The best brands embraced in these sales have been sold at the highest figures in the quotations. The inferior irons have been sold under quotations.

Stocks here are very much reduced, and receipts light.

Virginia Cold Blast Charcoal Pig Iron	$27 to $33
" Warm " " " "	24 to 28
" " " Coke " " 1 X	24 to 25
" " " " " " 2 X	22 to 23
" " " " " " 3	21 to 22
" Anthracite 1 X	25 to 26
" " 2 X	23 to 24
" " 3	22 to 23

San Francisco, Cal.

From the *Commercial Herald*, of November 18, 1875.

The Selby Smelting Works has been incorporated, and it is expected that operations will be resumed at the works within another week. Pig iron continues to pile in upon us; the *Ellen Goodspeed*, from Newcastle, Eng., bringing 253 tons. The present stock of pig iron seems to be steadily accumulating. The steamer from Portland brought down 40 tons Oregon pig iron—present asking price $37 per ton. We quote the range of the market for pig iron, $32 50@35 50. Tin plate is without movement, quotations nominal. The stock is thought to be large. The supply of Sydney tin is liberal, with a limited demand; price 22½c. Banca pig tin is held at 25@26c. The stock of yellow metal is not large, and when suits are required they are ordered from the East by rail. The market for American cast steel is well supplied, and is fast taking the place of best brands of English. The *JohnGamble*, from Liverpool, brought 500 tons pig iron.

St. Louis. Nov. 30, 1875.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

Mo. Stone Coal No. 1 Fy.	$26@27	Massillon Iron, A No. 1	.34@35
" " " 2 "	24½@25	" " B " 1	.32@33
" " Gray Mill,	23½@24	" " " 2	.30@31
" Charcoal No. 1, Fdy.	26@27	Cold Bl. Car Wheel, Mo. 3	@35
" " " 2, "	23½@24	" " " Tenn.	30@32
" " Gray Mill,	23@24	" " " Ala.	30@32
Tenn. " No. 1, Fdy.	25@26	" " " H. R.	35@40
" " " 2, "	23@24	Mo. Charcoal Blooms	60@65
" " Gray Mill,	22@23	" Scrap "	60@65
" Coke, No. 1, Fdy.	25@26	" " hammered Billets	8c@90
" " " 2, "	23@24	Assorted Bar Iron	2 40c.
" " Gray Mill,	23@24	No. 1 Wrought Scrap	.1c.
H. R. Char. No. 1, Fdy.	26@27	Heavy cast "	.¾c.
" " " 2, "	24@25	Light "	.½c.
" " Gray Mill,	24@25		

Montreal. Nov. 23, 1875.

We quote pig iron (prices in gold): Eglinton and Clyde, $21 50; Carnbroe, $22 50; American, $24 to $26; Summerlee and Calder, $23 to $23 50; Langloan and Gartsherrie, $23 to $23 50; Coltness $24 to $24 50; Hematite $30 to $31. Bar, per 100 lb., Scotch and Staffordshire, $2 30 to $2 40; best, do., $2 55 to $2 65; Swedes and Norway, $5 to $5 50; Lowmoor and Bowling, $6 50 to $7.—*Monetary Times.*

METALS.

NEW YORK, FRIDAY EVENING, Dec. 2, 1875.

There is a fair amount of business doing in a jobbing way, but no important transactions are reported. London quotations show a weakness.

Gold Coin.—During the week past gold has ranged from 114⅜@115⅜ and closed at 114¾.

Bullion.—Fine silver bar is quoted at $1 23@$1 24, gold, per ounce, and fine gold bar at par ($20 67 gold, per ounce,) to ¼ per cent. premium.

Copper.—The sales during the week amount to about 400,000 lb. at 23⅜c., which price is still bid, with 23⅝c. asked. The demand is light, and but little inquiry is anticipated until after stock-taking at the end of the year. London advices by cable, to-day, quote Chili Bars at £80/10.

Tin.—The demand for this article is of a jobbing nature, and the following prices are well maintained: Straits, 19⅛c., gold; L. and F., 19⅛c.; Refined, 19 c.; and Banca, 23⅜@24c. London advices, by cable, to-day, quote Straits at £73. There are no late advices from Singapore. A cable message, from London, says that no reliable information, relative to tin, can be procured from the Straits. The information so far received, relative to the disturbances in Mallacca, are so indefinite, as to make any opinion on the probable bearing on tin of no value.

Tin Plates are only moving in a small way at the following quotations in gold, per box: charcoal tins, $7.50; charcoal ternes, $7; coke tins, $6 50; and ternes, $6.25.

Lead.—We are reported sales aggregating about 100 tons of ordinary at 5¾c.@5.95c. gold, which are still the asking prices. A better inquiry is not looked for until about the middle of January, but as some manufacturers are carrying very light stocks a fair demand is anticipated about that time.

The San Francisco *Commercial Herald* of November 25, says: "The Selby Smelting and Lead Work's Company has been incorporated. A. J. RALSTON, President: PRENTISS SELBY, Manager. Capital, $200 000. We will now have a full supply of "Selby" pig lead for shipment to New York, and also a full stock of sheet and pipe lead, drop shot, etc., besides a market for base and rebellious ores. It is the intention of those interested to run these two establishments to their full capacity."

Spelter and Zinc.—Domestic is nominally quoted at 7.40c. currency, although it is stated that the Combination is but very indifferently sustained, and that there is considerable underselling going on. Sheet zinc is quoted at 8¼@9c. gold.

Antimony is quoted at 14@14½c. gold, under a quiet business.

Quicksilver.—The London market was quoted at £11, November 23. This market continues at .70c., gold, per lb. and San Francisco 65c.

The San Francisco *Commercial Herald* of November 18, says: "The export demand, thus far during November, has exceeded the supply; the price paid, 65c., though occasional sales have been reported a shade off.

"Our exports by sea for the last week were 3,124 flasks, valued at $157,070.

"We note a sale of 1,000 empty quicksilver flasks at $1 50.

FINANCIAL.

New York Stocks.

FRIDAY, Dec. 3, 1875.

The sales in the New York Stock Market during the past week show an increase of some 2500 shares, compared with those of the previous week. The extreme fluctuations, with one or two exceptions, have not exceeded one per cent.

The stock of the Mariposa Land and Mining Co. has advanced about one per cent., with pretty free sales. A recent despatch from Merced City, California, reports the striking of a body of pay ore, of undefined extent, by the main Mariposa Tunnel, and that the vein is increasing in width. It lies between two primitive formations, with a pipe-clay gouge, and is full of sulphurets. Heavy rains have swollen the Merced, so that a solid stream, six feet thick and four hundred feet wide, rolls over the Benton dam. The Mariposa turbines were stopped temporarily. Merced City was flooded, and quantities of small nuggets and grains of gold were washed out of the sands.

Coupons are due and payable, in New York, on the following bonds during the month of December: Rockland Nickel Mining Co.; Delaware, Lackawanna & Western RR. convertible bonds; Cons. mortgage bonds of the Morris & Essex RR., coupon paid by the D. L. & W. RR. Co.; St. Louis & Iron Mountain RR, Arkansas Branch, gold bonds. These coupons are being funded by H. G. MARQUAND, 20 Nassau street, N. Y. Wilmington Coal Mining Co. (due Nov. 1st); Tennessee Coal and RR. Co. These coupons are being paid at Nashville, Tenn.

The bonds of the Chesapeake and Ohio Railroad have been extensively dealt in during the week, the majority of sales being made at the quotations given in our last. Closing prices, however, show an advance of over one per cent. from the highest point recorded a week ago, at which figure some $5000 were sold.

RICHMOND, VA., Nov. 27.—In the United States Circuit Court, to-day, Hon. WILLIAM M. EVARTS, of New York, counsel for the Chesapeake and Ohio Railroad, made a motion for the dismissal of the proceedings appointing a Receiver for the road and looking to an early sale of the same. Judge SHIPMAN, of New York, counsel for the plaintiffs, stated that after examining authorities he was satisfied that this court had no jurisdiction. Judge BOND, after stating that the court was not ready to hear such a motion, by request of counsel, fixed the 20th of December as the time, and Alexandria as the place for the next hearing of the case. The effect of this will be that Mr. HENRY TYSON, of Baltimore, the receiver appointed by Judge BOND, will hold on until the 20th of December, and that then the old officers of the road will, probably, take charge again, and the old management will be reinstated until such time as the creditors may choose to proceed in the State courts.

Messrs. & FISK HATCH are preparing a plan for the reorganization of the Chesapeake and Ohio Railroad, which will aim to give justice to all classes of bondholders and creditors. This plan will, probably, be submitted for signatures in a few days, and, until it is made public, all parties interested would do well to defer any action in the premises.

The Consolidated mortgage 6 per cent. bonds of the Lehigh and Wilkes-Barre Coal Co. have been very active during the week at advanced figures, closing 96¼, ex-interest.

Quotations and Sales of Stocks and Bonds,

For the week ending Dec. 3, 1875.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	277½	275	275	41
Consolidation Coal Co	—	—	47	40
Spring Mt. Coal Co	66	64	64	260
American Coal Co	—	—	48	50
Maryland Coal Co	—	—	18	200
Del., Lack., and West. RR. Co.	119⅝	119⅛	119⅛	1994
New Jersey Central RR. Co.	105½	104	104⅝	2305
Delaware and Hudson Canal Co.	124	123	123	162
Quicksilver Mining Co. pref'd	23¼	23	23	300
" " " Common	17½	17	17	750
Mariposa Land & Min. Co. various.	8⅛	7	8⅛	1500
St. Louis & Iron Mountain RR.	16	15	15	400
Lehigh & Wilkes-Barre Coal Co.	—	—	40	—
				—
Total Shares sold				8002
Sales for the week previous				5572
Increase				2430

BONDS.

	Sales.		Price
Ches. & O. R. R. 6s, 1st. con. on	205,000	.....	30¾@ 32
" " " ex coupon	—	.....	— @ —
Central RR. of N. J. 1st Mtg. N.	—	.....	— @113
" " " 1st Cons.	6,000	.....	— @108
" " " Convt.	—	.....	— @105
Del. and H. Canal, 1st Mtg. '94	10,000	.....	— @107¼
" " 7s, '84	—	.....	— @111
" " Reg. '91	—	.....	— @112½
Del., Lack. & W. R. R., 7s, conv.	5,000	.....	— @124
" " " " 2d Mtg.	—	.....	—@†113¾
St. Louis & Iron Mount'n 1st Mtg	6,000	.....	92½@ 94
St. Louis & Iron M'tn, 2d Mtg.	—	.....	— @ 56†
Lehigh & Wilkes-Barre Cons.	61,000	.....	‡96¼@ 97¾
Total Sales	$291,000		

Closing quotations, in the absence of sales, represent the latest prices bid.

† Asked. ‡ Ex Interest.

Philadelphia Stocks.

PHILADELPHIA, Dec. 3, 1875.

We note but slight changes in the quotations of Philadelphia Stocks. The sales for the week aggregate some 14,000 shares above the amount reported in our last, being principally confined to transactions in the Pensylvania Railroad Company shares, which have been exceptionally strong, closing at an advance of ½ per cent with sales of some 27,500 shares for the week.

Bonds are fairly active with but slight alterations in prices.

The following were sold at auction during the week at the prices annexed: 17 shares Bethlehem Iron Company, $39 50 per share; 286 shares Pennsylvania Railroad Company, 200 shares at $51 25 per share, and 86 at $51 12½ per share; $5,000 Lehigh Valley Railroad Company's coupons, 7 per cent., March and September, 110¼ per cent.; 300 shares Cambria Iron Company, $16 per share; 100 shares Susquehanna Canal Company, par $50, $7½ per share; 200 shares Schuylkill Navigation preferred, $15 12½ per share; $2,000 Schuylkill Navigation Company mortgage loan, due 1907, coupons, 6 per cent., May and November, 82 per cent.; $300 Schuylkill Navigation Company boat and car loan, due 1915, 90¾ per cent.; 200 shares Dalzell Petroleum Company, $14 1or lot; 300 shares Ocean Oil Company, $15 for lot; 1,000 shares Keystone Zinc Company, $80 for lot; 200 shares Densmore Oil Company, $18 for lot; 300 shares Maple Shade Oil Company, $1 50 for lot; 500 shares Rock Oil Company, $2 50 for lot; 400 shares Pope Farm Oil Company, $1 for lot; 1,000 shares Philadelphia Mutual Petroleum Company, $2 50 for lot; 30 shares Pennsylvania Canal Company, $12 per share; $5,000 Huntingdon and Broad Top Mountain Railroad and Coal Company, first mortgage 7 per cent. gold, April and October, 106¼ per cent.; $1,000 Danville, Hazleton and Wilkesbarre Railroad Company, 25¼ per cent.; 16 shares Westmoreland Coal Company, $84 50 per share.

Coupons and interest on the following bonds are payable in this city during the present month: The Dunbar Iron Company; Lehigh Coal and Navigation Company, gold loan of 1897, (coupons), also interest on the convertible mortgage loans 3 per cent., and the consolidated mortgage loans; Lehigh Valley Railroad Company, interest on the 7 per cent. bonds of the Pennsylvania and New York Canal and Railroad Company, also, 1st mortgage bonds and the 1st mortgage consolidated, and coupons registered; Pennsylvania Railroad, interest on the coupons mortgage registered bonds; Philadelphia and Reading Coal and Iron Company, (Coal Land loan) registered, interest and coupons.

Quotations and Sales of Stocks and Bonds.

For the week ending Dec. 3, 1875.

STOCKS.

	Highest	Lowest	Closing	Shr's
Lehigh Valley RR. Co.	62⅜	62¼	62⅜	396
Pennsylvania RR.	51¼	50⅞	51⅛	27500
Reading RR.	55¾	55⅜	55¾	3739
Lehigh Coal and Nav. Co	50⅜	50½	50⅛	6585
Penn. Canal	—	—	9	—
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co.	—	—	3½	—
Locust Mountain Coal Co	—	—	—	—
Westmoreland Coal Co.	—	—	84½	—
St. Nicholas Coal Co.	—	—	1	—
Cambria Iron Co.	16¼	16	16¼	233
Crane Iron Co.	—	—	46	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	77	75¾	75¾	88
Total shares sold				38,241
Sales for the week previous				23,851
Increase				14,690

BONDS.

	Sales.	Price
H and B. T. RR. 1st mortgage, 7s	—	— @103
" " " 2d " "	—	— @102
" " " 3d " cons	—	— @ 55
Lehigh Valley RR. Con. mtg. 6s, Reg	2,000	— @ 97½
" " 7s, 1910	2,000	110 @110¼
" " 6s reg.	—	— @106
Pennsylvania RR., 1st mtge. 6s	1,000	— @105½
" gen. " cou. 1910	7,000	102½@102⅝
" " gen. " 6s, reg.	4,000	— @102
Phil. & Reading RR. 6s,	—	— @ 82
" " " G. M. 7s, cou. 1911,	—	— @109¾
" " " " 7s, Reg	—	— @109¼
" " new convertible 7s, '93	16,600	108¾@109¼
Phil. & Reading C. & I. Co. 7s deb.	22,000	83¼@ 83½
" " " 6s Tam. Tract	1,000	— @ 90
" " " McNeal & Leland Tracts	—	— @ 91
Lehigh Coal & Nav. Co., 6s '84	—	— @102
" " " RR., '97	8,000	— @102½
" " " '77	—	— @ 98
" " " gold, '97	4,500	107 @107½
Penn. Canal, 6s	—	— @ 70
Penn. and N. Y. Canal, 7s	—	— @109
Ches. and Del. Canal, 6s	2,000	— @ 88
Susquehanna Coal Co. 7s	—	— @ 70
Buck. Mount Coal Co. 6s	—	— @ 97½
Penn. Gas Coal Co. 6s	—	— @100¼
Total amount of sales	$70,100	

Closing quotations, in the absence of sales, represent the latest prices bid.

Gold and Silver Stocks,

NEW YORK, Dec. 3, 1875.

The mining share market still continues to advance, and the whole list is reported active, with a strong upward tendency. The principal feature is the advance of Consolidated Virginia, which is quoted at $366 per share, being an advance of $56 per share, compared with our last quotation. This stock at one time during the week touched $397, and the whole list advanced in about the same proportion.

The Rising Sun Mining Company, located at Colfax, California, has declared a dividend of two per cent.

The Geyser and Nonpareil Mining Companies have levied assessments payable in December.

An assessment of 30 cents per share has been levied on the stock of the Los Prietos Mining Company, operating in San Barbara County, Cal., delinquent December 31st.

The capital stock of the Stanislaus River Mining Company has been increased from 18,000 to 54,000 shares, of the par value of $100 each.

The Capital Quicksilver Mining Company have filed articles of incorporation for the purpose of mining for quicksilver. The capital stock of the corporation is $5,000,000 in 50,000 shares of $100 each.

The Nonpareil Gold Mining Company, operating at Deer Flat, Tuolumne County, Cal., have levied an assessment of 50 cents per share. It will be delinquent December 14th.

MINING NOTES.

The Crown Point Mine is supplying sufficient ores to run the Cañon Mills to their full capacity of 280 tons per day; also the Devil's Gate Mill and the Mexican Mill.

In the great mines of the Washoe District the work of re-building the destroyed mills and hoisting works is making progress in the face of stormy weather and other difficulties. Enormous quantities of supplies are in process of collection to provide against the possibility of a stoppage of transportation over the Sierras and the consequent isolation of the mines. The Consolidated Virginia engines are finished, and only await the completion of other machinery to resume their work, and the building of the hoisting works, which are larger than the former structure, is now approaching completion.

The Ophir Company's principal buildings are finished, and the machinery is being erected. While the water is kept down by a donkey engine, a large force of miners is employed on the 1,465 and 1,600-foot levels, preparatory to resuming hoisting operations. The Winfield Mill is running steadily on reserve ores from the Ophir. The California battery mill is going forward toward completion, and will, it is expected, be ready for operation about January 15. The underground workings below the 15,00-foot level of the California mine show the same rich ore as is seen above that level.

The Nevada mines consume 2200 flasks of quicksilver per month.

The Sutro Tunnel, November 23, was 11,492 feet long, and had struck a small stream of water hot enough to cook eggs.

The President of the United States has appointed the following commission to examine and report on the Sutro Mining and Drainage Tunnel, Nevada: Lieut.-Col. H. G. WRIGHT, Corps Engineers, U. S. A.; Lieut.-Col. JOHN G. FOSTER, Corps Engineers, U. S. A.; Prof. WESLEY NEWCOMB, M. E., Ithaca, N. Y.; Capt. W. R. KING, Corps Engineers, U. S. A.

The Northern Belle Mine is situated in Esmeralda County, Nevada. The lodge varies from two to twenty feet in width, and the rock pays by mill process $100 to the ton. It is now opened to the depth of 500 feet with cross-cut, winzes, drifts, chutes, etc. A mill of twenty stamps is able to turn out from $90,000 to $115,000 per month, at an average expense of from $28,000 to $30,000. The ore has to be hauled seven miles, wood eight miles, and other supplies, including lumber, one hundred and forty miles. The company declares a regular dividend of $50,000 per month, carrying over a surplus of from ten to twenty thousand each month.—*San Francisco Stock Report.*

THE VALUE OF THE BIG BONANZA'S ORES.—The actual yield of 51,348 tons of ore, extracted by the Consolidated Virginia Mining Company during the three months ending Sept. 30, is equal to about $102 41 per ton. The Ophir Mining Company took out, 14,896 tons, during the same period, the yield of which was nearly $43 60 per ton. From a product of 32,530 tons of ore, extracted by the Crown Point Mining Company during the same time, the yield was equal to nearly $20 17 per ton. The Belcher Mining Company took out of their mine, during the three months, 20,381 tons of ore, which averaged nearly $31 14 per ton.

In the annual report of State Surveyor GARDNER of California for the present year, it is stated that there are 290 vuartz mills in the State which will crush ore to the amount of 327,000 tons. There are 5175 miles of ditches which supply 200,000 inches of water per day.

QUOTATIONS:

	No. of shares.	Nov. 23.	Dec. 1.
Sierra Nevada	100,000	$13	15
Union Consolidated	100,000	9	9
Mexican	108,000	20	20
Ophir	108,000	52	52
California	540,000	69	70
Consolidated Virginia	108,000	310	366
Best & Belcher	100,800	52	59
Gould & Curry	103,000	18	21
Savage	16,000	78	97
Hale and Norcross	16,000	37	41
Chollar Potosi	28,000	69	81
Alpha Consolidated	30,000	18	18
Imperial	100,000	8	8
Yellow Jacket	24,000	70	82
Kentuck	30,000	13	14
Crown Point	100,000	28	30
Belcher	104,000	19	27
Overman	38,400	47	53
Caledonia	20,000	15	17
Raymond & Ely	30,000	17	18
Meadow Valley	60,000	3	3
Eureka Consolidated	50,000	13	19
Eureka C. V.	20,000	6	6

Copper Stocks.

Specially reported by Messrs. WILSON W. FAY & Co., Bankers and brokers, room 7 Traveller Building, 31 State street, Boston.

BOSTON, Thursday Evening, Dec. 2.

The market on copper stocks for the week ending tonight is as usual, dull. The clique on Allouez don't seem to be very successful in their manipulations, and the stock is inclined to be weak. Calumet has receded from 161½ to 161 asked. Duncan silver has receded from 1.80 to 1.37 and looked weak, but its friends say they are getting out silver enough to run the mine and more, and assert that much higher prices are in store for it in the near future. The stock of the National Mine, on which the assessment remains unpaid on December 17, will be advertised for sale. Quincy Mining Company has been alternatively weak and strong, and closes a little weak at 44.00 asked. We understand that they had to contend the past year with an impoverished streak of ground in their lower working, and are pushing cross-cuts and other searchers after "pay ground." The stamp mill used by the Osceola mine has been burned, which will interrupt their work the coming winter. The managers of the Superior mine talk of leasing their mine to tributors.

DESCRIPTION.	Par Value.	No. of Shares	CLOSING. Bid.	Asked.
Allouez	$50	20 000	$ 12¼	$12½
Calumet and Hecla	100	80,000	160	161
Central	25	20,000		
Copper Falls	25	20,000	33 75	34 25
Dana	25	20,000	6¾	7⅛
Duncan Silver	20	60,000	15	17
Franklin	25	20,000	120	1¾
Humboldt	25	20,000	13	13¼
Madisca	25	20,000	25	30
Mesnard	25	20,000	25	30
Minnesota	25	20,000	⅛	¼
National	15	20,000	2 10	2¼
Petherick	25	20,000	2⅛	2⅜
Pewabic	25	20,000	55	65
Phenix	25	20,000		
Quincy	25	20,000	43 50	44 00
Ridge	25	20,000	6¾	6¾
Rockland	25	20,000	50	60
Silver Islet	—	—	—	—
Star	25	20,000	25	30
Superior	25	20,000	12	17
Eastern RR.				

Gas Stocks.

NEW YORK, Dec. 3, 1875.

The stock of the New York Mutual Gas Company shows an advance of about 2 per cent., as compared with our last quotations. This is the only exception to a downward tendency of the list, especially of the stock of the Brooklyn Companies, which are dull, with quotations in many instances considerably lower. This decline in these stocks is attributed to the recent agitation of the kerosene question.

Sales of 500 shares of the People's of Brooklyn, at par,

are reported to us; also 100 shares of the Citizens' at 145, and 100 shares of Brooklyn at 247.

At a recent auction sale 120 shares of the New York Gas Company sold in lots at prices ranging from 150 to 155.

40 shares of the Pottsville, Pa., Gas Company were sold at auction during the week at 40¼.

The Boston Gas Company has declared a quarterly dividend of 2¼ per cent., equal to a disbursement of $62,000 payable Dec. 1.

Coupons on the following companies are payable in New York during the month: People's Gas Light and Coke Company of Chicago; Citizens' Gas Company of Newark, and the Metropolitan Gas Company of New York.

For the week ending the 25th of Nov., the sales of the San Francisco Gas Company have aggregated 400 shares at from 93¾ to 94.

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad st., N. Y.

Quotations "bid" and "asked" of New York City and Vicinity Gas Companies are on the $100 of stock and not on one share.

Companies in New York and Vicinity	Cap. Stk.	Par.	last Dividend.	When Paid.	Bid.	Askd.
			pr.c			
Mutual, N. Y.....	$5,000,000	$ 100	2⅛	Oct. '75	109	109⅛
" " Bonds	900,00	1,000	†3⅜	Aug. "	104	105¼
NewYork, "	4,000,000		5	Nov. "	150	151
Metropol. "	2,500,000	100	5	Sept. "	158	160
" " Certf.	1,000,000	....	3½	" "	105	106
" " Bonds	500,000	1,000	3½	July, "	104	
Harlem "	1.850,000	50	4	Aug. "	138	140
Manhattan" ..	4,000,000	50	5	July, "	310	312
Brooklyn, B'klyn .	2,000,000	25	5	Nov. "	245	247
Nassau " ..	1,000,000	20	4	July, "	135	
" " Certf.	700,000	1,000	3½	Nov. "	100	100½
People's "	1,000,000	10	3½	July, "	101	101⅛
" " Certf.	300,000	1,000	3½	July, "	95	97½
" " Bds	325,000	....	3½	Aug. "	100	101
Metropol. "	1,000,000	10	3½	May, "	105	105⅛
Wmsburgh " ..	1,000,000	50	5	July, "	145	
" " Certf.	1,000,000	....	3½	July, "	100	102
Citizen's " ...	1,200,000	20	2½	Oct. "	145	146
" " Certf.	320,000	1,000	3½	Oct. "	101½	102⅛
J. C. & Hob'n. N.J.	386,000	20	5	July, "	160	170
Westchest.Co. N.Y.	466,000	50	4	July, "	100	105

† Gold.

Companies out of Town.*	Cap. Stk.	Par	Bid	Askd.
People's " " of J. C.....			130	
Citizen's G. L. Co., Newark, N.J.	500,000			65
Hempstead" " L. I., N.Y.	40,000	100		100
Jamaica, " " " "	25,000	100		100
Richmond Co., S. I. "	300,000		100	105
Citizens', Rochester, "		100	50	65
Rochester Gas Co., "		100	50	
People's G. L. Co. Albany,"	1,000,000	100		60
Mutual " Buffalo "	750,000	100	50	
Troy G. L. Co., Troy, N. Y.....			108	
Brockport, N. Y., G. L. Co.	25,000	100		85
Baltimore G L. co., Balt.. Md.	2,000,000	100	180	
People's G. L. Co., Balt.. Md	2,000,000	25	27	
Hannibal G. L. Co., Hanni., Mo.	100,000	100		60
La Clede, Mo				123
Lewiston G. L. Co., Lewis., Me	400,000	100		75
Chicago G. L. Co., Chicago, Ill.	2,000,000	100	140	
Jacksonville, Ill.....	120,000	100	80	90
Lima, Ohio.....	60,000	100	10	
Derby G. L. Co., Derby, Conn..	160,000	100		80
Woonskt G. L. Co. Woonskt, R.I.	150,000	100	100	
Fort Wayne G. L. Co. F. W., Ind		100		105
North. LibertiesG. L. Co. Phila.		25	29⅛	
Wilkes-Barre G. L. Co W. B. Pa.		50	70	
Washington G. L. Co., Phila....			42	43
Pottsville, Pa., Gas Co....		50	40⅜	
Portland G. L. Co. Portland, Me	350,000	50	72	75
Hartford G. L. Co., Hartford, Ct	700,000	25	45	
Boston G. L. Co., Boston, Mass.	2,500,000	500	775	780
Chelsea G. L. Co. Chelsea, "	300,000		139	
Cambridge G. L. Co., Cam., "	700,000		132¾	
Louisville G. L. Co., Louis., Ky.			127	
Cincinnati G. L Co, Cincin. O..			201	
S. F. G.L. Co. San Francisco, Cal			93¾	94
City G. L. Co. Montreal, Canada	1,440,000	40	129	130⅛
Consumers G. L. (old.)Tor., Ont	600,000	50	130	132
Halifax G. L. Co., Halifax, N.S..		40	147	150

* These quotations represent the latest obtainable prices t which sal es were made.

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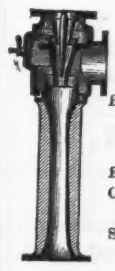

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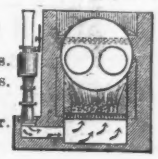

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Manager Chicago S. M. Co. (limited.)

Supt. Office EMMA HILL CONSOLIDATED M. CO.,
LITTLE COTTONWOOD, Utah, Dec. 17, 1874.

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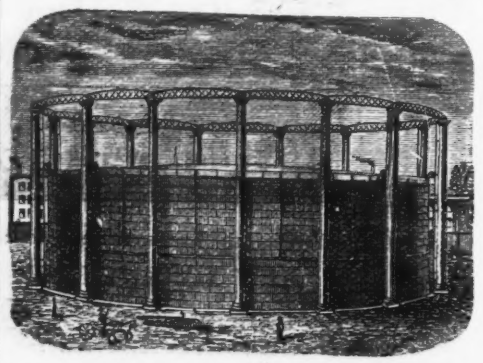

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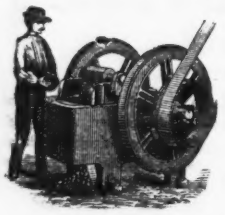

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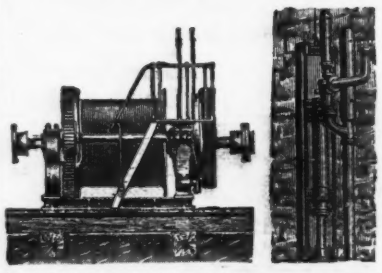

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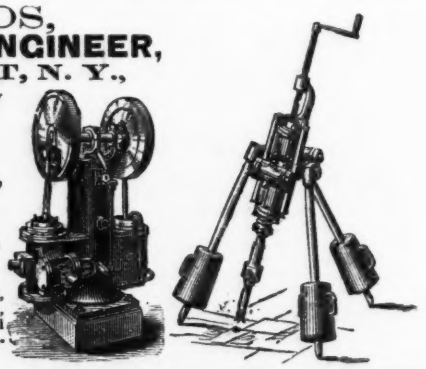

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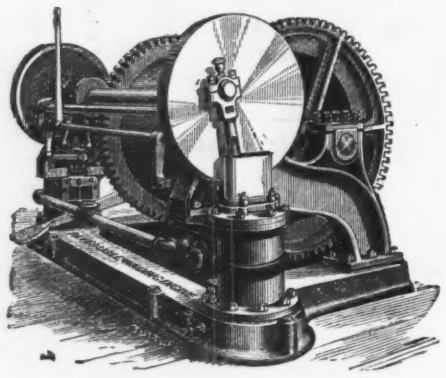

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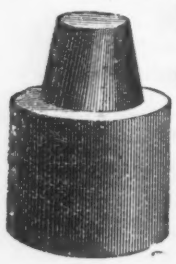

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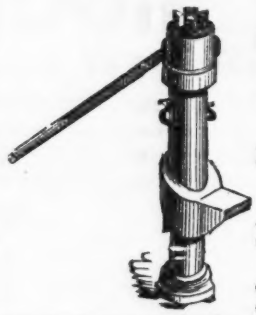

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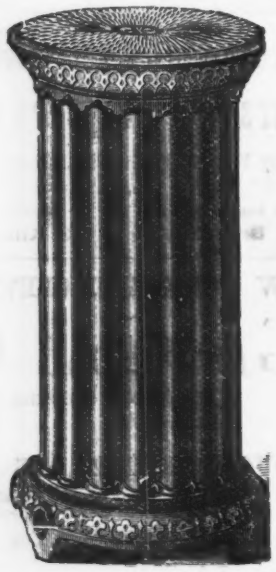

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